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HYPERTENSION AND THE SURGICAL KIDNEY

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In 1934 Goldblatt,[1] working in the physiologic laboratories at Western Reserve University, reported that partial constriction of the renal arteries of dogs was followed by a rise in blood pressure. Other observers previously had shown that hypertension was related to renal pathologic change, but no one ever had demonstrated it so graphically. Similar experiments were made subsequently in numerous laboratories, most of which confirmed the observations of Goldblatt.

Seldom have physiologic experiments attracted such immediate, widespread interest in medical circles. The etiology and the treatment of hypertension have presented problems which have baffled medical science for long and it is not surprising that any suggestion as to the cause and amelioration of this disease would create general interest. It was not long before Goldblatt's experimental observations were confirmed by clinical reports [2] of cases in which the blood pressure of patients with hypertension returned to normal after removal of a diseased kidney. These reports of cases seemed to prove that unilateral renal lesions may cause hypertension and that removal of the affected kidney often is followed by recovery.

It seemed to us that a review of a large series of cases in which there were renal lesions which had been subjected to surgical treatment would afford information concerning such problems as the following: (1) the incidence of hypertension in relation to the different types of renal lesions, (2) the postoperative course of the blood pressure in these cases and (3) the relation of hypertension to (*a*) renal stasis, (*b*) renal function and (*c*) bilateral renal involvement.

INCIDENCE OF HYPERTENSION AMONG PATIENTS WITH SURGICAL CONDITIONS OF THE KIDNEY

Before determining the incidence of hypertension in association with renal lesions it seemed desirable to determine its occurrence in a random group of adult patients. A study was made of the blood pressure readings in 975 consecutive cases taken at random from the registrations at the Mayo Clinic (table 1). Adopting 145 mm. of mercury as the lowest level of abnormally elevated systolic blood pressure, we found that 195 of the 975 patients examined, or 20 per cent of the total, had hypertension. In deference to the opinions of some clinicians, we also kept records which would allow 160 mm. to be considered the lowest level of abnormally elevated systolic pressure (table 2). One is impressed with the influence of age in determining the incidence of hypertension, a factor which is not directly related to a renal lesion. Of the patients who were less than 50 years of age 9.1 per cent had hypertension, while of those who were 50 years of age or more 37.9 per cent had hypertension. Thus the incidence of hypertension in the older group was more than four times as great as it was in the younger group.

In order to determine whether the incidence of hypertension was increased by renal pathologic change observed in the so-called surgical kidney, a study was made of a group of 1,684 patients subjected to renal surgical procedures at the Mayo Clinic (table 2). In this group approximately the same percentage had hypertension as that observed in an average group of adult patients. It could be inferred that many renal lesions of a surgical type do not cause hypertension, since the incidence of hypertension in the group of patients subjected to surgical measures was not higher than that in the average group just mentioned. However, the influence of age on the incidence of hypertension again was found to be a factor, since the incidence of hypertension among patients with surgical kidneys was lowered by the slightly larger percentage of these patients who were less than 50 years of age.

A study of the 315 cases in which surgical lesions of the kidney were associated with hypertension showed that the incidence of hypertension varied widely among the various types of renal lesions concerned. Hypertension occurred most frequently in association with chronic renal infection which caused extensive atrophy of the renal tissues and sclerosis of the blood vessels. Renal infection was not an etiologic factor in hypertension unless it caused widespread atrophic changes in the renal parenchyma. Hypertension occurred much more frequently among patients with atrophic pyelonephritis than among those with any other renal lesion. Such sclerosis may occur either as the result of primary renal infection or secondary to some other renal lesion. The incidence of hypertension in association with surgical pyelonephritis, without atrophic changes, was less than half of that observed in association with diffuse atrophic changes. That some secreting renal tissue remain is necessary, since complete atrophy does not cause hypertension. It is of interest that hypertension afflicted only a small number of patients with acute

From the Section on Urology (Dr. Braasch) and the Division of Surgery (Dr. Walters), the Mayo Clinic.

Read before the Section on Urology at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

1. Goldblatt, Harry; Lynch, James; Hanzal, R. F., and Summerville, W. W.: Studies on Experimental Hypertension: I. The Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia, J. Exper. Med. **59**: 347-380 (March) 1934.

2. Barker, N. W., and Walters, Waltman: Hypertension Associated with Unilateral Chronic Atrophic Pyelonephritis: Treatment by Nephrectomy, Proc. Staff Meet., Mayo Clin. **13**: 118-121 (Feb. 23) 1938. Butler, A. M.: Chronic Pyelonephritis and Arterial Hypertension, J. Clin. Investigation **16**: 889-897 (Nov.) 1937. Goldblatt, Lynch, Hanzal and Summerville.[1]

renal infection who were subjected to surgical operation; yet this lesion often involved both kidneys. The preoperative blood pressure was normal in all but one of the cases in which operation was performed for perinephric abscess.

In what follows, the number of cases representing the various lesions will not add to the total of 315, because not all types of lesions encountered will be discussed.

Atrophic Pyelonephritis.—In this group were few, if any, clinical data which would enable one to distinguish between the patients who had hypertension and those who did not have it. Although extensive renal and vascular sclerosis was found in most of the kidneys removed in the cases in which hypertension was present, nevertheless similar renal pathologic change was found occasionally in the cases in which blood pressure was normal. It would seem that certain systemic factors exist in one individual which cause hypertension in the presence of a renal lesion but that existence of the same factors does not affect the blood pressure of another individual. It is of interest that, of ten patients with hypertensive atrophic pyelonephritis, seven were females. In contrast to the high incidence of hypertension in association with atrophic pyelonephritis, the blood pressure was normal in five cases in which operation was performed for congenital hypoplasia.

Knowledge of the postoperative course of the blood pressure was available through follow-up records in eighteen of the forty-three cases of atrophic pyelonephritis. In this group of eighteen patients were ten who had had hypertension preoperatively and it was found that the blood pressure of seven of these had returned to normal after operation, while it was not influenced in three cases. Of the eight cases in which the blood pressure had been normal preoperatively hypertension developed after operation in one, while it remained normal in the others. It was difficult to determine, on preoperative clinical examination, whether

TABLE 1.—*Incidence of Hypertension According to Age: Patients Taken at Random, Mayo Clinic, 1938*

Age of Patients, Years	Cases	Systolic Blood Pressure, 145 Mm. or More		Systolic Blood Pressure, 160 Mm. or More	
		Cases	Per Cent	Cases	Per Cent
Less than 20	57	0	0	0	0
20 to 29	146	3	2.1	1	0.7
30 to 39	178	15	8.4	9	5.1
40 to 49	225	37	16.4	23	10.2
Total less than 50	606	55	9.1	33	5.4
50 to 59	202	58	28.7	44	21.8
60 to 69	118	56	47.4	41	34.7
70 or more	49	26	53.1	16	32.7
Total more than 50	369	140	37.9	101	27.4
Total for entire group	975	195	20.0	134	13.7

nephrectomy would cause reduction in blood pressure. A comparatively recent onset of hypertension, and a short duration of symptoms, with no hypertensive changes in other tissues, seemed to warrant the best prognosis. The percentage of cases in which blood pressure was permanently reduced after nephrectomy for atrophic pyelonephritis (70) was far greater than when nephrectomy was performed for any other type of lesion.

Renal Stone.—A review of the blood pressure in 793 cases in which operation was performed for renal stone (hydronephrosis with stone, stone with infection and stone without infection) revealed that there were 161 cases, or 20.3 per cent, in which the blood pressure was 145 mm. or more. Although the statistical incidence

TABLE 2.—*Relative Incidence of Hypertension in Association with Renal Lesions: 1,684 Surgical Cases*

	All Cases	Hypertension: Systolic Blood Pressure, 145 Mm. or More		Hypertension: Systolic Blood Pressure, 160 Mm. or More	
		Number	Per Cent	Number	Per Cent
Adenocarcinoma	137	38	27.7	19	13.9
Tuberculosis	158	12	7.6	4	2.5
Pyelonephritis, atrophic	43	20	46.5	15	34.9
Pyelonephritis other than atrophic	70	13	18.6	6	8.6
Hydronephrosis	372	51	13.7	21	5.6
Hydronephrosis and stone	577	121	20.9	82	14.2
Stone with infection	164	37	22.5	19	11.6
Stone without infection	52	3	5.7	0	0
Miscellaneous	111	20	18.0	9	8.1
Total	1,684	315	18.7	175	10.4

of hypertension in association with renal stone did not differ much from the percentage in all cases, the actual incidence of hypertension in association with stone is slightly higher than this survey indicated, because among the patients with stone was a somewhat larger percentage less than 50 years of age. The influence of secondary infection on the blood pressure in cases of stone is shown by the fact that hypertension occurred in 22.5 per cent of cases in which there was manifest infection and in only 5.7 per cent of cases in which there was little or no infection. The degree of pyuria was not the important factor; neither was the reduction in function or urographic deformity of the affected kidney; the extent of atrophic changes in the renal parenchyma and the vascular sclerosis apparently caused the hypertension. It should be noted that in eight, or 40.0 per cent, of the twenty cases of atrophic pyelonephritis associated with hypertension renal lithiasis existed previous to the other conditions. It may be inferred, therefore, that renal stone with atrophic types of infection is a factor in causing renal hypertension. The incidence of hypertension in cases of bilateral stone was found to be no greater than in cases of unilateral stone.

The postoperative course was traced in 189 cases of renal stone. Of this number, in 111 cases hypertension had been present preoperatively and in seventy-eight cases preoperative blood pressure had been normal. The group of 111 cases in which hypertension had been present preoperatively was divided into (1) twenty-five cases in which the blood pressure returned to normal following operation, (2) ten cases in which the blood pressure returned to normal for a variable period after operation but subsequently became elevated and (3) seventy-six cases in which the blood pressure was not altered by surgical measures. It is of interest that the blood pressure returned to normal and remained normal following surgical intervention in approximately 23 per cent of the cases in which hypertension had been present preoperatively. Although nephrectomy was carried out in most of these cases, the blood pressure became normal in many cases following nephrolithotomy. It may be assumed that removal of an irritating and blocking stone

and drainage of infected portions could remove factors which influenced hypertension. In the ten cases mentioned previously the blood pressure returned to normal after operation and remained normal over a period of from six months to two years, but subsequently hypertension returned. Apparently etiologic factors of hypertension may be temporarily allayed by operation, but other underlying systemic factors may reassert themselves subsequently.

It is evident that etiologic factors other than those relative to the kidney were present in the group of seventy-six cases in which hypertension was not affected by operation. In the majority of these cases the renal lesion was unilateral and the failure in reduction of blood pressure could not be explained by any lesion in the other kidney, at least as far as could be determined on careful examination. Although many cases in which nephrectomy was performed were included in this group, in most of the cases a conservative operation had been performed.

Hypertension developed subsequent to operation in twelve cases in which the preoperative blood pressure had been normal. In ten of these cases the increase in blood pressure followed a conservative renal operation. In this group were several cases in which the blood pressure returned to normal following secondary nephrectomy. It can be assumed, therefore, that when hypertension develops following nephrolithotomy the possible development of postoperative nephrosclerosis must be considered and subsequent nephrectomy may be advisable.

Hydronephrosis.—The low incidence of hypertension accompanying hydronephrosis without stone (table 2) can be explained partially by the large number of patients in this group who were less than 50 years of age. Hypertension afflicted only 7.7 per cent of the patients less than 50 years of age and 38.9 per cent of the patients more than 50 years of age. The size of the hydronephrotic sac and the degree of stasis were not a factor, since there was no difference in the incidence of hypertension in the presence of hydronephrosis graded 1 or 2 taken together and in the presence of that graded 4 or more. Bilateral hydronephrosis, which occurs often, was not accompanied by hypertension except in two cases in which bilateral hydronephrosis and acute renal stasis were present. The presence of infection was not in itself an important factor in the presence of hydronephrosis, since the incidence of hypertension in cases in which infection was present was only 14.3 per cent. As was true in the cases of stone and pyelonephritis, the resulting sclerotic and atrophic changes in the renal parenchyma were the deciding factors.

The postoperative course of seventy-three patients operated on for hydronephrosis without stone was traced. Of this number, twenty-nine had had hypertension preoperatively. In forty-two cases the preoperative blood pressure had been normal and remained so and in two other cases, although the preoperative blood pressure had been normal, hypertension developed after operation. Among the twenty-nine cases in which hypertension had been present preoperatively there were ten, or 34.4 per cent, in which the blood pressure returned to normal following surgical measures and remained normal for from one to five years. Nephrectomy was performed in eight of these ten cases and conservative operation in two. The hypertension persisted in sixteen of the twenty-nine cases in spite of nephrectomy and apparently was not related to renal pathologic change. Although hydronephrosis was bilateral in four of these cases, this did not seem to be etiologic of hypertension, since surgical drainage did not affect it and the function of the two kidneys, taken together, was normal.

Renal Tuberculosis.—In a group of 158 patients operated on for renal tuberculosis hypertension was found in only twelve cases, or 7.6 per cent. Although one might expect a high incidence of hypertension with diffuse tuberculous infection of the kidney, which is often of a cicatricial nature, the contrary was true (table 2). Nephrosclerosis may be present but vascular sclerosis is apparently uncommon in the presence of the renal pathologic changes which occur with tuberculosis. In explaining the low incidence of hypertension the factor of age is of importance, since 132 patients, or 83.5 per cent, were less than 50 years of age.

Hypertension might be expected to occur as a result of the extensive atrophic changes which take place in the tuberculous kidney which has undergone so-called autonephrectomy. However, of a group of thirty-seven cases in which autonephrectomy was diagnosed, hypertension occurred in only five, or 13.5 per cent. There was no increase in the incidence of hypertension among the patients with bilateral renal involvement.

The course of hypertension following nephrectomy for renal tuberculosis is of interest. Eleven patients were traced who had had preoperative hypertension with renal tuberculosis.. Of this number the blood pressure of seven returned to normal. The blood pressure of two others remained normal for less than a year and subsequently became elevated. In the two remaining cases the hypertension was not influenced by nephrectomy. It is evident that, although the incidence of hypertension with renal tuberculosis is low, the chance for recovery following nephrectomy is encouraging.

Renal Tumor.—It is evident that the factor of age explains the comparatively high incidence of hypertension in this group (table 2) since eighty-seven, or 63.5 per cent, of these patients were 50 years of age or more. It should also be stated that the blood pressure in most cases was elevated only moderately, since it was below 160 mm. in nineteen, or 50 per cent, of the thirty-eight cases. The possibility of a pressor substance being secreted or of secretion of such a substance being stimulated by the tumor cells has been suggested by several observers and must be considered. Against this hypothesis, however, is the negative evidence obtained by Bradley and Pincoffs [3] by means of perfusates in several cases of Wilms's tumor. The large number of patients with hypernephroma whose blood pressure is not elevated would tend to negate the hypothesis of pressor secretion. Secondary renal infection may have some effect on blood pressure, although hypertension was present in only four of twelve cases in which infection was a factor.

There are not enough cases of renal neoplasm other than hypernephroma to allow an accurate survey of each type to be made. Hypertension was noted in six cases of epithelioma of the renal pelvis and the blood pressure returned to normal after nephrectomy in only

3. Bradley, J. E., and Pincoffs, M. C.: Association of Adenomyosarcoma of Kidney (Wilms Tumor) with Arterial Hypertension, Ann. Int. Med. **11**: 1613-1628 (March) 1938.

one case. The blood pressure was recorded in eighteen cases of Wilms's tumor and definite hypertension was noted in only five.

The postoperative course of forty-three patients operated on for hypernephroma was traced. Preoperative hypertension had been present in twenty-one of these cases. The blood pressure returned to normal after nephrectomy in nine of them; in three of the cases there was a temporary drop in blood pressure, with subsequent hypertension. The hypertension was not affected by nephrectomy in nine of the cases and it could be assumed that extrarenal factors caused the hypertension in this group and that the presence of the tumor was merely coincidental.

Of particular interest was a case of polycystic disease with hypertension in which one kidney had become functionless as a result of diffuse infection. The blood pressure returned to normal following nephrectomy and had remained normal for more than a year when the most recent information was obtained. In another case of polycystic disease, wherein a similar condition was present, blood pressure was temporarily reduced but in a few months hypertension returned.

POSTOPERATIVE HYPERTENSION

The blood pressure of fourteen patients was normal prior to a conservative renal operation, and hypertension developed after the operation. Urologic examination revealed evidence of reduced function and persistent infection in the kidney subjected to previous operation and, after removal of the kidney, the blood pressure became normal. Examination of the removed kidney usually disclosed widespread tissue atrophy and vascular sclerosis, which apparently had resulted from operative trauma and infection. The operations that were performed, or the conditions for which operations were performed, were, as far as we could learn, nephrolithiasis, hydronephrosis, nephrostomy, ureterolithotomy, nephropexy, ureterovaginal fistula following hysterectomy and persistent vaginal fistula. Nephrosclerosis as a cause of hypertension was observed in two cases following severe renal injury. In every case of hypertension in which there was a history of previous renal operation or renal injury, therefore, the possibility of postoperative nephrosclerosis must be considered.

A postoperative increase in blood pressure apparently occurs more frequently following conservative operation for renal and ureteral lithiasis than other lesions. In considering the advisability of nephrectomy in the presence of renal stone and extensive infection, the possibility of subsequent development of sclerotic pyelonephritis with hypertension must be borne in mind. Postoperative renal atrophy and sclerosis may also explain the hypertension which sometimes is observed following transplantation of the ureters into the sigmoid. Postoperative urographic examination in two of these cases revealed that one kidney was functionless and exploration of the affected kidney disclosed widespread sclerotic changes as the result of infection and stasis. Removal of the affected kidney was followed by restoration of the blood pressure to normal.

RENAL INSUFFICIENCY

Renal insufficiency was not found to be etiologic of hypertension in the cases in which renal surgical operation was performed. In cases in which bilateral stone and hydronephrosis were present, together with moderate impairment of function of both kidneys, and in which both kidneys were subjected to conservative operation, the incidence of hypertension was not greater than in similar cases in which function was not impaired. Among patients with insufficiency of both kidneys, who were examined but not operated on because of low renal function, the incidence of hypertension was only a trifle higher than in the random group.

RENAL BACK PRESSURE

Renal back pressure is not of much significance in causing hypertension. The average blood pressure in cases in which the hydronephrotic sac was large or in cases of bilateral hydronephrosis was no higher than normal. Hypertension developed in two cases of bilateral hydronephrosis in which one kidney suddenly became occluded and it was relieved in one of these cases by renal drainage.

CONTRAINDICATIONS TO SURGICAL INTERVENTION

Hypertension is caused by factors other than those relative to the kidney in most cases and the presence of a surgical kidney may be of only coincidental clinical significance. This is proved by the large number of cases in which hypertension is present but there is no reduction in blood pressure following removal of a diseased kidney. Nephrectomy may be contraindicated in cases in which hypertension accompanies a surgical renal lesion if any of the following factors are present: (1) bilateral renal disease so extensive that removal of one kidney would be of no benefit; (2) the existence of hypertension of long standing, with such extensive secondary degenerative lesions in other organs that removal of a diseased kidney would no longer influence the subsequent clinical course; (3) evidence of advanced renal insufficiency, and (4) existence, in another organ, of an unrelated serious lesion which in itself might be regarded as inoperable.

COURSE OF BLOOD PRESSURE AFTER OPERATION

The postoperative course of the blood pressure was followed in 372 cases in which surgical operation was performed on the kidney. All these patients were traced for at least six months, the majority of them for more than a year and, in several instances, for as long as five years. Preoperative hypertension had been observed in 198 of these cases and the preoperative blood pressure had been normal in 174 cases. Hypertension was permanently relieved by surgical operation for various renal lesions in sixty-five, or approximately a third, of the 198 cases. Hypertension in the presence of surgical lesions of the kidney was relieved more often by nephrectomy than by conservative operation.

In seventeen cases there was a postoperative drop in blood pressure but the hypertension returned within a few weeks or months following operation. A temporary drop in blood pressure, occurring immediately after operation, often is caused by rest in bed and removal of a toxic irritant. In several cases the blood pressure remained normal as long as two years after operation and then returned to the preoperative level. In such cases it may be inferred that primary hypertension existed and had been temporarily increased by a surgical renal lesion. In order to determine the permanent result of the operation it is necessary to follow the patient's blood pressure for at least two years. There were 117 cases in which alteration in blood pressure did not take place as a result of surgical operation on the kidney. Since evidence of disease of the other kidney could not be determined by careful examination, it would be logical to assume that all these

patients were suffering from so-called essential hypertension and that their condition was not influenced by a renal pathologic condition, at least of a surgical nature. Included in this group were seventy-two cases in which nephrectomy was performed and forty-five in which the operation was conservative. Among the cases in which preoperative blood pressure was normal, hypertension developed subsequent to operation in twenty. Several cases were included in this group in which the increased blood pressure was caused by postoperative nephrosclerosis and in which subsequent nephrectomy caused the blood pressure to return to normal.

COMMENT AND SUMMARY

Hypertension occurring in the presence of a unilateral lesion of the kidney was frequently relieved by surgical operation on the kidney.

The incidence of hypertension in a group of 1,684 patients subjected to renal surgical operation was no higher than it was in a group of patients taken at random. In a study of the incidence of hypertension the factor of age is of importance.

The renal lesion amenable to surgical treatment which occurs most often in association with hypertension is atrophic pyelonephritis. This lesion is the result of extensive infection and is characterized by widespread atrophy of the renal tissues and sclerosis of the renal blood vessels; apparently this process causes hypertension. Hypertension afflicted twenty of forty-three patients operated on for primary atrophic pyelonephritis, or 46.5 per cent. The incidence of hypertension is low in cases in which operation is performed for pyelonephritis without atrophy and sclerosis. Acute cortical renal infection or perinephric abscess is seldom a factor in causing hypertension.

Hypertension was observed in 161 cases, or 20.3 per cent, of 793 cases in which operation was performed for renal stone. The role of secondary infection is important, since hypertension occurred in 22.5 per cent of cases in which infection was manifest and in only 5.7 per cent of cases in which there was no infection. However, the deciding factor was not the degree of infection but the presence of extensive vascular sclerosis and parenchymal atrophy.

Hypertension was noted in approximately 14 per cent of cases of hydronephrosis without stone for which operation was performed. As with renal stone, the presence of tissue atrophy and vascular sclerosis seemed to affect the blood pressure. The degree of pyelectasis did not seem to be a factor, since the incidence of hypertension was no greater in cases in which pyelectasis was of grade 4 than in cases in which it was of grade 1.

Hypertension was observed less frequently in the presence of renal tuberculosis than as an accompaniment of most other forms of surgical kidney. It was present in twelve, or 7.6 per cent, of the 158 cases of renal tuberculosis studied.

Hypertension was found in thirty-eight cases, or 27.7 per cent, of 137 cases in which operation was performed for renal adenocarcinoma. The comparatively high incidence of hypertension in this group of cases is increased by the factor of age, since eighty-seven patients, or 63.5 per cent, were in the sixth decade of life or older. The exact influence of the neoplasm is obscure; the secretion of a pressor substance has been surmised, but corroboratory chemical and physiologic evidence is wanting.

Hypertension may develop in a variable time after a previous conservative renal operation. In many of these cases the blood pressure becomes normal after removal of the affected kidney. In every case of hypertension in which there is a history of previous operation, the possibility of postoperative nephrosclerosis must be considered.

Renal insufficiency apparently is not a factor in causing hypertension. In most cases of hypertension no evidence of reduced renal function was found. On the other hand, many patients whose renal function was reduced had no hypertension.

Back pressure as the result of renal stasis usually is not a factor in hypertension unless acute bilateral obstruction is present.

The discovery of a unilateral renal lesion in the presence of hypertension does not indicate that operation is advisable in every case, since other factors are often present which would contraindicate it.

Bilateral renal involvement, such as occurred in many cases of renal stone, hydronephrosis and renal tuberculosis, was not an etiologic factor in hypertension.

A follow-up study was made in 198 cases in which hypertension was present and in which surgical operation was performed. The blood pressure became normal after operation in sixty-five, or a third, of the cases and remained normal for a year or more.

It may be predicated that hypertension will be relieved by surgical operation in approximately 70 per cent of cases in which it accompanies atrophic pyelonephritis, in 50 per cent of cases in which it is associated with renal tuberculosis and in 25 per cent of cases in which it is an accompaniment of renal stone, hydronephrosis or tumor.

Although hypertension which is associated with surgical lesions of the kidney is relieved more often by nephrectomy than by conservative operation, the blood pressure often returned to normal after nephrolithotomy and renal drainage.

Reduction in blood pressure may exist as long as a year or more after operation and yet hypertension may return. This may be explained on the ground that a toxic or irritant lesion has been eliminated and, when this influence has worn off, the underlying essential hypertension reasserts itself. In order to determine whether recovery after operation is permanent it is necessary to determine the patient's blood pressure for more than a year.

Hookworm.—Hookworm disease in the United States is due to Necator americanus (except in a small area in California). The adult parasite lives in the upper part of the small intestine, where it is attached to the mucosa and sucks blood from the host, so that the essential clinical picture is one of anemia. The degree of clinical symptomatology depends in general on the number of parasites harbored. Ova are discharged in the feces and hatch only on exposure to the air. The larvae live in the soil and pass through several molts until the infective stage is reached. Invasion of the host occurs in practically every instance through the bare skin, usually of the foot. The larvae penetrate to the lymph circulation, thence through the general circulation to the lungs. They pass through the alveoli to the bronchial tree and are carried up to the posterior nasopharynx and swallowed. Once in the small intestine, the adults fasten themselves to the mucosa and are removed with difficulty. They may live for five years or longer.—Smillie, Wilson G.: Public Health Administration in the United States, New York, Macmillan Company, 1940.

VASCULAR NEPHRITIS AND HYPERTENSION

A COMBINED CLINICAL AND CLINICOPATHOLOGIC STUDY OF 150 NEPHRECTOMIZED PATIENTS

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In recent years, medical interest has been centered on the problem of hypertension. Although it was in 1827 that Bright connected the condition of the kidney with blood pressure and there have been frequent observations of the relation of cardiac hypertrophy to surgical renal disease which date back as far as 1835, it remained for Goldblatt's [1] work on experimentally produced hypertension in dogs and monkeys to reawaken interest in the subject and open a new and profitable approach to experimentation.

Renal ischemia may be produced in a variety of ways. In addition to the classic experiments of Goldblatt and the recording of numerous instances of hypertension in polycystic kidneys and hydronephrosis, one must consider arteriosclerotic plaques of the renal artery and pyelonephritis as causal factors.

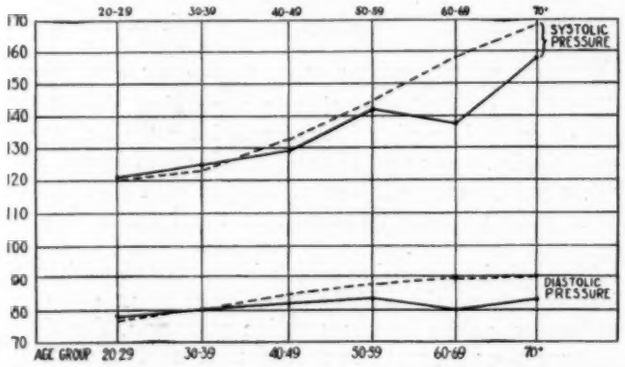

Fig. 1.—Comparison of blood pressure of age groups with "normal." Solid line, 150 nephrectomy cases; broken line, 5,540 cases compiled by Wetherby (average of males and females, Berglund and Medes [10]).

Blackman [2] examined fifty cases of "essential" hypertension and fifty control cases without hypertension and found arteriosclerotic plaques causing reduction in the lumens of one of each of the main renal arteries in forty-three (86 per cent) of the cases with hypertension. The control cases showed only five (10 per cent) with comparable lesions. It should be accepted that renal ischemia can cause hypertension under certain conditions.

Longcope [3] studied the relation of bilateral chronic pyelonephritis to hypertension in cases ending fatally. He concluded that the factor involved in the production of hypertension was not associated with renal failure.

Weiss and Parker [4] concluded that pyelonephritis is often associated with arterial hypertension and that vascular changes frequently occur. They further concluded that there is a great tendency toward severe hypertension in patients with pyelonephritis and that pyelonephritis is responsible for at least 15 to 20 per cent of cases of malignant hypertension. They seem to imply that the sequence of events in pyelonephritis leads to the terminal stage of severe hypertension. With certain reservations in mind, it should be accepted that pyelonephritis causes renal damage which may in turn lead to hypertension. The exact nature of the specific lesion causing hypertension is doubtful at least.

Butler [5] in 1937, and later Leadbetter and Burkland,[6] reported cases of unilateral renal disease associated with hypertension in which apparent cure of the hypertension was produced by nephrectomy. Many other observers [7] soon followed with well studied case reports, and many more will undoubtedly soon be added. These cases have been carefully studied and may be accepted as proved, representing another phase of the problem of hypertension. We must therefore accept the evidence that unilateral renal disease is capable of producing hypertension and that the blood pressure is influenced favorably by elimination of the diseased kidney in some cases.

In spite of these authentic instances, which even now do not comprise a large group of cases, it has appeared to urologists that this association of renal disease with hypertensive cases is not the rule in urologic practice. The challenge to the urologist's concept has been accepted by Crabtree and Prien [8] and by Mulholland.[9]

It is our purpose in this study to examine, through the specimen obtained by nephrectomy, with respect both to hypertension and to vascular changes in the kidney, a series of routine urologic cases which often represent long standing, severe degrees of unilateral renal damage. Such a study affords a mean of examination of the pathologic processes in the kidney, together with clinical end results of therapy.

One hundred and fifty almost consecutive nephrectomized patients were studied urologically and by pathologic examinations of the removed kidneys. The pathologic studies were detailed, in that examinations of the more normal portions of the kidneys were made as well as of the grosser aspects of the lesion present. Special attention was given to the condition of the blood vessels in both the more normal and the more diseased portions of the specimens.

The age, sex and blood pressure of these cases is shown graphically in table 1. These statistics are quite comparable to those compiled by Wetherby [10] in a statistical study of 5,540 normal individuals. The blood pressure determination of any individual was arrived at by study of all known blood pressure readings before

From the Urological Clinic of the Beth Israel Hospital.
Read before the Section on Urology at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

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2. Blackman, S. S., Jr.: Arteriosclerosis and Partial Obstruction of the Main Renal Arteries with "Essential" Hypertension in Man, Bull. Johns Hopkins Hosp. **45**: 353 (Nov.) 1939.
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8. Crabtree, E. G., and Prien, E. L.: Renal Injury in Colon Bacillus Pyelonephritis, J. Urol. **42**: 982 (Dec.) 1939.
9. Mulholland, S. W.: Hypertension's Challenge to Urology, J. Urol. **42**: 957 (Dec.) 1939.
10. Wetherby, Macnider: A Comparison of Blood Pressures in Men and Women: A Statistical Study of 5,540 Individuals, in Berglund, Hilding, and Medes, Grace: The Kidney in Health and Disease, Philadelphia, Lea & Febiger, 1935, p. 370.

operation. Immediately preoperative readings were not used because of the effect marked sedation has on the lowering of blood pressure. Cases in which there were long intervals between known pressures were deter-

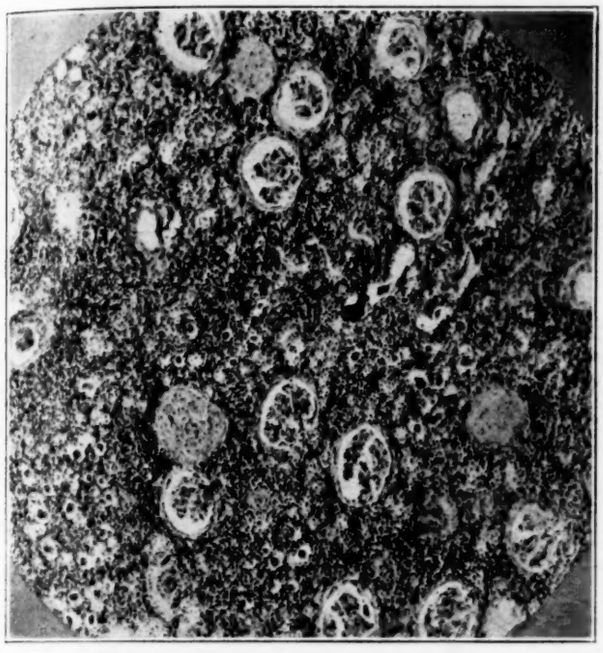

Fig. 2.—Section of the cortical portion of a chronic pyelonephritic kidney from a patient without hypertension. The glomeruli show various stages of hyalinization and interstitial infiltration.

mined by taking the average of the recent readings, excluding the remote pressures. Some of our patients had only one preoperative blood pressure determination, which was usually taken the night before operation.

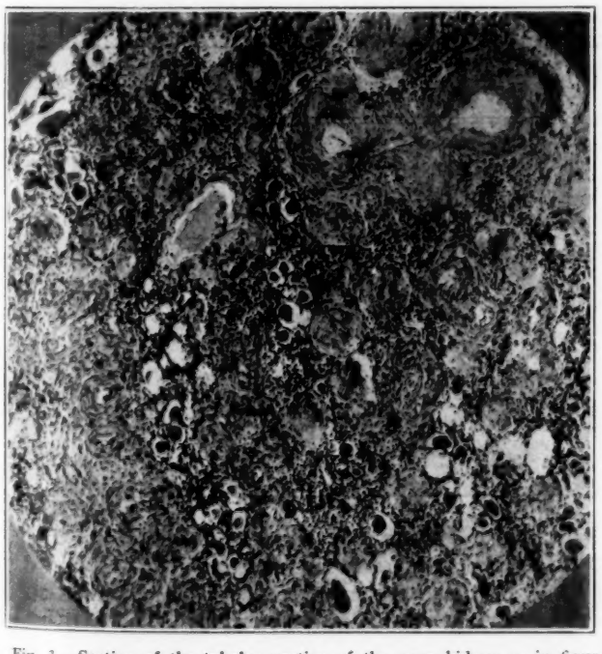

Fig. 3.—Section of the tubular portion of the same kidney as in figure 2. Note a sclerosed vessel in the right upper portion and hyaline debris in lumens of tubules.

These readings will tend to give our averages a higher value, since excitement and nervousness definitely elevate blood pressure. This has been found to be a factor in many cases which have been followed carefully since the present study was begun.

The effect of emotion on blood pressure has been shown conclusively by Alexander [11] to cause definite elevation. The averages shown by him were 19 mm. of mercury systolic and 12 mm. diastolic pressure. In our figures we have not made allowance for these cases. The blood pressure readings are taken as they have been recorded. Despite this, a comparison with the average blood pressures of men and women in Wetherby's study shows the averages of our severe renal damage group to be somewhat lower. This comparison has been charted in figure 1. A comparison of age group 10-19 has been omitted, since only one case fell into this group. The figures for charting Wetherby's averages were obtained by averaging his readings for men and for women in the same age group. This was necessary, since the groups studied and recorded related to both sexes.

TABLE 1.—*Age, Sex and Blood Pressure*

Age Group	Total Number in Group	Number of Males	Number of Females	Average Age	Average Systolic Blood Pressure	Average Diastolic Blood Pressure
10-19	1	0	1	12	138	85
20-29	21	9	12	25.8	122	78.4
30-39	35	9	26	34.4	125.7	80.1
40-49	34	17	17	44.3	128	80.9
50-59	43	21	22	52	142.4	82.8
60-69	12	7	5	62.4	137.5	79.4
70+	4	2	2	73	156	80
Averages	..	..	..	....	132.3	81.2
Totals	150	65	85			

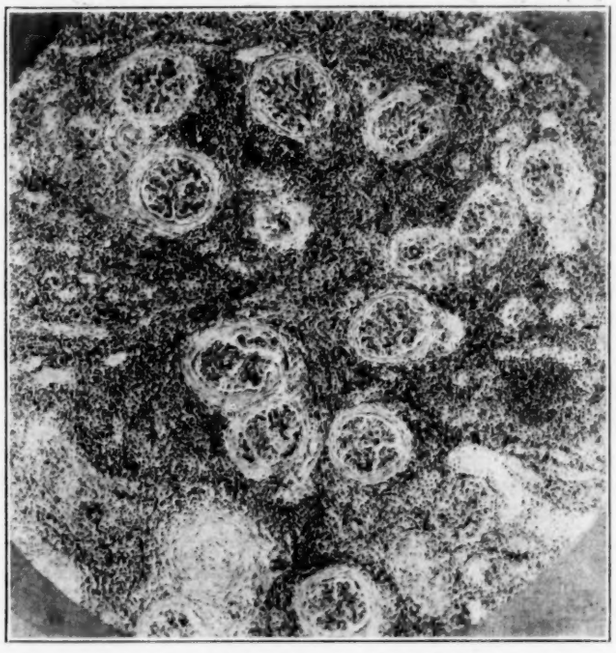

Fig. 4.—Section from the cortical portion of the kidney from a case of chronic pyelonephritis without hypertension. The tufts of the glomeruli are in fairly normal condition but thickening of the peripheral layer of Bowman's capsule characterizes this lesion.

It might be argued that hypertensive cases might be hidden by averaging large groups of individuals. In order to study more in detail the actual presence of hypertension in this series, all cases showing blood pressures above 150 systolic, 100 diastolic, were further investigated. Fourteen cases were found. The age groups, the blood pressure, and the pathologic condition are shown in table 2. Follow-up blood pressure readings were obtained of twelve of these patients and have

11. Alexander, Franz: Psychoanalytic Study of a Case of Essential Hypertension, Psychosom. Med. **1**: 139 (Jan.) 1939.

been recorded. No follow-up was obtained of the other two patients because they could not be located.

The pathologic conditions found in this survey are shown in table 3. The types of disease and age distribution of this group are strikingly similar to the summary of 180 cases of nephrectomy recently reviewed by Deming.[12] The age distribution of the neoplastic group is quite consistent with the 642 cases of renal neoplasm studied by Priestley.[13] The cases here presented may be considered representative of severe unilateral renal damage.

TABLE 2.—*Cases (Fourteen) with Hypertension and Follow-Up Blood Pressure*

Age Group	Total Number in Group	Cases with Hypertension	Pathologic Condition	Degree of Renal Vessel Damage	Postoperative Blood Pressure	Months Postoperative
30-39	35	154/105	Tuberculous pyelonephritis	0	144/ 80	14
40-49	34	160/100	Chronic pyelonephritis	++	160/ 90	29
		165/ 95	Chronic pyelonephritis	0	160/110	43
50-59	43	178/105	Hypernephroma	+++	160/100	2
		228/128	Hypernephroma	++	244/140	18
		160/100	Hypernephroma	++	180/ 88	4
		180/100	Chronic pyelonephritis	+	*	*
		160/100	Hypernephroma	+	138/ 68	60
		160/100	Chronic pyelonephritis	++	190/110	7
60-69	12	165/ 85	Chronic pyelonephritis	0	140/ 70	39
		160/ 78	Chronic pyelonephritis	+++	190/ 80	44
		170/110	Chronic pyelonephritis	++	160/ 90	57
70+	4	176/ 98	Hypernephroma	++	*	*
		192/ 82	Hypernephroma	0	172/100	1

* No follow-up study obtainable.

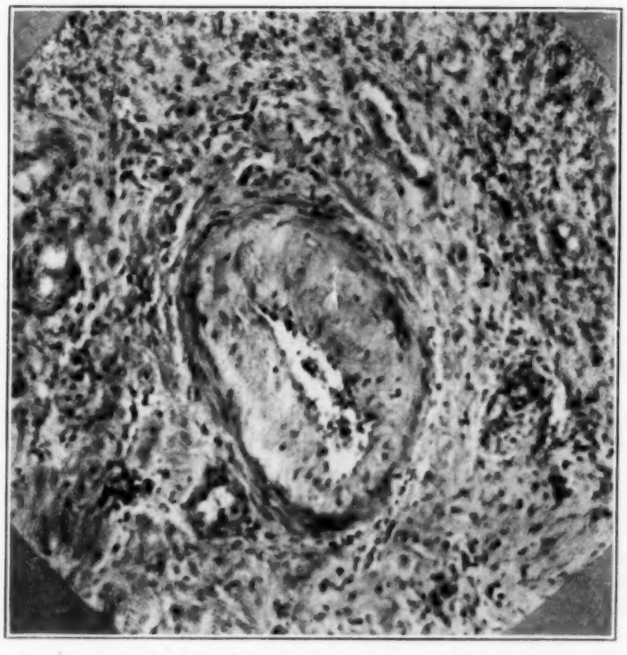

Fig. 5.—Section of pyelonephritic kidney of patient without hypertension. Lesion of grade 3 as defined in text. In figures 5, 6 and 7 note that the lesions occur in the larger arteries of the kidneys and that the sclerosing process involves the circumference of the vessels and that the lumens of the vessels are greatly reduced in size.

The microscopic study of these cases was particularly detailed, with special attention given to inflammatory and blood vessel changes. Of our 150 cases, ninety-nine (66 per cent) showed chronic renal infection. The degree of damage varied in each case, of course, but all cases showed marked hyalinization and fibrosis of glomeruli in portions or all parts of the specimen.

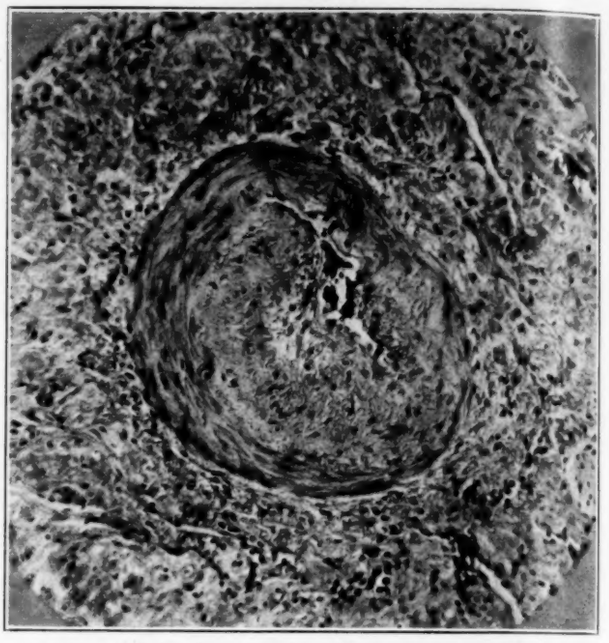

Fig. 6.—Section of pyelonephritic kidney of patient without hypertension. Lesion of grade 3.

Examples of the glomerular changes are shown in figures 2, 3 and 4. The changes depicted here were common in the majority of this group.

The nature of the influence which marked alteration of glomerular pattern has on the vascular tree is doubtful at the present time. MacCallum [14] has shown that there is an intraglomerular circulatory readjustment of the vascular pattern, with normally occurring pathologically changed glomeruli in mammals other than man. The exact changes which he described may not apply to man, but it seems safe to assume that some change definitely takes place. Our interest here was not primarily with the pattern of the change but rather with the degree of narrowing of vessel lumens. On a purely arbitrary basis we have classified the vessel changes into three categories, first degree representing small but definite narrowing of the lumen and third degree

TABLE 3.—*Pathologic Types*

Age Group	Hypernephroma or Other Neoplasm	Chronic Pyelonephritis with Hydronephrosis with or without Nephrolithiasis	Chronic Pyelonephritis with Contraction	Tuberculous Pyelonephritis	Congenital Abnormalities Including Hypoplasia	Traumatic	Nephrolithiasis with Normal Renal Tissue	Actinomycosis	Cystic
10-19	..	1	..	..	..	..	..	..	..
20-29	..	7	2	9	3	..	..	..	..
30-39	4	19	3	9	..	..	..	..	..
40-49	5	20	1	2	..	1	4	1	..
50-59	22	16	1	3	..	..	..	..	1
60-69	7	5	..	..	..	..	..	..	..
70+	3	1	..	..	..	..	..	..	..
Totals	41	69	7	23	3	1	4	1	1

12. Deming, C. L.: The Future of the Unilaterally Nephrectomized Patient, J. Urol. **40**: 74 (July) 1938.
13. Priestley, J. T.: Survival Following Removal of Malignant Renal Neoplasms, J. A. M. A. **113**: 902 (Sept. 2) 1939.
14. MacCallum, D. B.: The Bearing of Degenerating Glomeruli on the Problem of the Vascular Supply of the Mammalian Kidney, Am. J. Anat. **65**: 69 (July) 1939.

representing marked narrowing, almost to the point of complete occlusion, with second degree representing the intermediate changes. Examples of third degree occlusion are shown in figures 5, 6 and 7, second degree in figure 8 and first degree in figure 9. We realize fully that we have no yardstick or exact measurements by which an accurate estimate of arterial occlusion can

TABLE 4.—*Renal Vessel Changes*

Pathologic Condition	Total Cases	Number of Cases Showing Renal Vessel Changes	Percentage of Cases Showing Renal Vessel Changes	Degree of Vessel Damage		
				1°	2°	3°
Hypernephroma or other neoplasm	41	10	24.4	4	4	2
Chronic pyelonephritis with hydronephrosis with or without nephrolithiasis	69	34	49.3	14	16	4
Chronic pyelonephritis with contraction	7	3	42.8	2	1	0
Tuberculous pyelonephritis	23	9	39.1	7	2	0
Congenital abnormalities including hypoplasia	3	0	0	0	0	0
Traumatic kidney	1	0	0	0	0	0
Nephrolithiasis without renal damage	4	0	0	0	0	0
Actinomycosis	1	1	....	1	0	0
Cystic	1	1	....	0	0	1
Totals	150	58	38.6	28	23	7

Of 150 cases, 99 (66%) showed renal infection.
Of 99 cases, 46 (46.4%) showed renal vessel changes.
Of 58 cases with vessel changes, 46 (79.3%) showed renal infection.

be determined in this present study. We do believe, however, that narrowing to the degree shown in these illustrations may well produce ischemia. All pathologic sections used in illustration are from cases without hypertension.

The changes in renal vessels in our study are shown in table 4. The tabulated results represent, in each case,

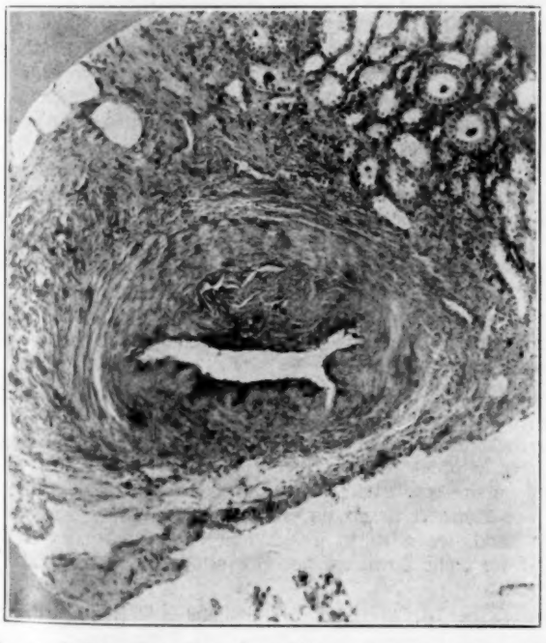

Fig. 7.—Section of pyelonephritic kidney of patient without hypertension. Lesion of grade 3.

an evaluation of the stages of the pathologic processes which occur in the kidneys. The degree of narrowing is not determined by the condition of a single isolated vessel. On the whole it was found to be the rule that, if the vessels of the most damaged portions of the kidneys were changed, some degree of change was present throughout the whole of the kidney. No portion of such kidneys from which sections were taken appeared to have normal vessels. We have classified the kidneys on the vascular condition of the vessels in the major proportion of the kidney. In all, approxi-

Fig. 8.—Grade 2 lesion as described in the text. Note that the vessel wall change is confined to but a portion of the circumference of the vessel.

mately 1,500 pathologic sections were examined. In the entire group, fifty-eight cases showed definite renal vessel changes. In the infectious group, which represented 66 per cent of the total group, we found forty-six (79 per cent) of the vessel changes. The group of chronic pyelonephritis with hydronephrosis showed that approximately 50 per cent had renal vessel changes.

COMMENT

We have attempted to evaluate the hypertensive tendency in 150 cases representing severe unilateral renal damage. Hypertension is not characteristic of these cases. A comparison with average blood pressure readings for the age groups indicates that our cases average slightly lower than normal. The possibility that a hypertensive tendency might be hidden by averaging large groups has been considered. In table 2, all cases showing hyptertension have been reviewed. Only fourteen cases showed hypertension. Six of these were hypernephroma, seven chronic pyelonephritis and one tuberculous pyelonephritis. The cases showing the severest hypertension occurred in hypernephroma, in which the age often was in the higher brackets.

The follow-up study on those cases which showed hypertension failed to show any definite trend toward improvement in blood pressure readings after nephrectomy. Two cases showed slight improvement; one hypernephroma and one chronic pyelonephritis. In two cases there was no follow-up.

An attempt to correlate hypertension and renal vessel change also met with failure. Again we recognize that our method of study furnishes no basis for estimating the production of renal ischemia. The total number of cases which showed hypertension is far too few in comparison with the large number which showed renal vessel changes to establish a sufficient correlation to

indicate that renal biopsy is a worthwhile diagnostic measure. Three of our cases of hypertension showed no alteration in renal vessels.

SUMMARY AND CONCLUSIONS

1. One hundred and fifty approximately consecutive nephrectomies were studied. These cases were representative of severe unilateral renal damage.

2. Hypertension was not a common finding in the clinical picture in this group.

3. Vascular changes, which have been considered to be causative factors in the production of hypertension, were present in a high percentage of our cases.

4. Elevation of blood pressure readings was not the rule, even in chronic pyelonephritis, in these cases. Nephrectomy was not followed by appreciable reduction in blood pressure readings before operation.

5. The exact etiologic factor in renal (ischemic) hypertension is as yet unknown. The pathologic and anatomic elements seem less important than an as yet unknown physiologic element.

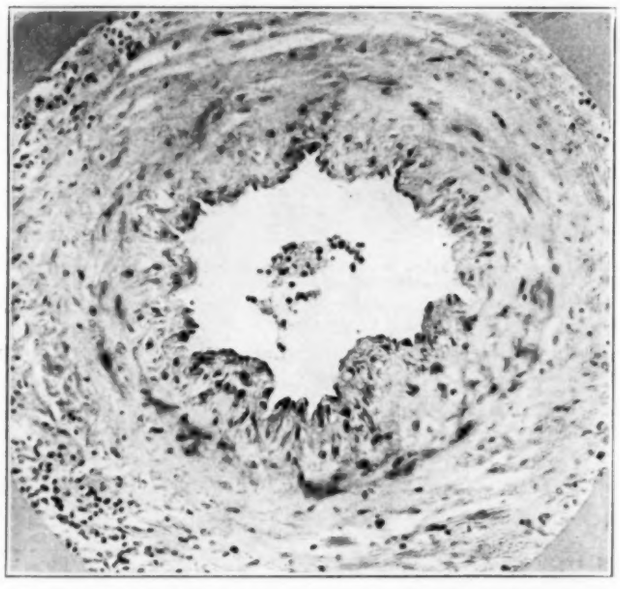

Fig. 9.—Grade 1 changes in an artery of a pyelonephritic kidney. Note that there is uniform change throughout the circumference of the vessel but that the lumen is not extensively narrowed.

6. Evidence is not produced by this study to encourage employment of nephrectomy in hypertensive cases, except for recognized surgical indications.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BRAASCH, WALTERS AND HAMMER AND DRS. CRABTREE AND CHASET

DR. STANFORD W. MULHOLLAND, Philadelphia: A year ago I was interested in experimental work regarding interference with the circulation to the kidney. I was reading isolated reports by surgeons who had found that certain of their patients with single kidney involvement would have diminution in their blood pressure following unilateral nephrectomy. It was necessary to go back and look at the cases in which I had operated previously with extensive kidney damage in order to correlate the experimental work. Dr. Braasch and Dr. Crabtree have reviewed large numbers of cases and have given interesting facts. The work they have done helps to make one realize that the problem is still physiologic. It is still a problem in which one must be looking for the element that is the underlying principle producing the result: the hypertension. Infection, malposition and stone causes blood vessel changes but the result is not always the same. Longcope has summarized our present knowledge of this mystery. He reminds us that no one has been able to tell why one patient develops hypertension long before there is any evidence of renal insufficiency and another patient develops hypertension only after there has been marked renal damage, while at the same time a third patient may die of uremia without having any hypertension. Physiologists have called attention to the fact that a preponderance of the work done by the kidney is accomplished by tubular excretion. It has been found that a comparatively small amount of the work is done by glomerular filtration. Perhaps it is the variation in the degree of damage to the real working renal mechanism that causes the development of this picture we know so well. It is an open challenge to be looking out for these cases that might fall into the group that will be aided by operation. We in Philadelphia are still reviewing our cases with the idea of trying to locate the influencing factor.

DR. ROY J. HOLMES, Miami, Fla.: The observation of Drs. Braasch, Walters and Hammer that atrophic pyelonephritis is the only type of surgical renal lesion associated with hypertension which can be removed with a degree of confidence is in keeping with my own experience. Renal anemia from defective arterial development is a possible factor and may manifest itself only by a reduction in the number of normal renal units and in the rate of renal blood flow. In studying the blood supply in two cases it appears to me that acquired atrophic pyelonephritis may readily be confused with congenital partial hypoplasia or anemia, on which a mild infection may or may not have been superimposed. Abnormalities and extreme variations of the renal artery are very common. In the two families I have known in which almost every member suffered from hypertension at an early age, the percentage of renal deaths seemed to be unusually high. It is pure speculation to suggest that this may throw some light on the well known familial or hereditary tendencies in some cases of hypertension. I am convinced that a kidney not already a legitimate candidate for nephrectomy should be sacrificed only if the kidney under suspicion is markedly reduced in size as compared with its normal fellow. The paper of Drs. Crabtree and Chaset is a much needed contribution tending to clarify the relation between the field of surgical renal pathology and hypertension and possibly directing attention more to renal anemia in which hyalinization, thickening of the arterioles and even functional impairment are secondary, not primary, factors. That degenerative changes are not always the measurement of renal ischemia is illustrated by many of Goldblatt's experiments in which little if any changes could be found in the renal unit or in its functional ability. Since endeavoring to institute methods of estimating the physiologically effective rate of renal blood flow, I feel that this, together with an accurate estimation of the size of the renal excretory mass, may give a faint answer to the challenge which, as Drs. Crabtree and Chaset say, still exists. We are indebted to Drs. Crabtree and Chaset for showing us that hypertension is rarely found in candidates for nephrectomy. We can, however, find considerable reward and encouragement by looking for small unilateral sclerotic kidneys with little if any urinary symptoms in hopeless victims of essential hypertension.

DR. EARL E. EWERT, Boston: Such papers as these will help form a standard in governing one's action toward patients suffering with various types of unilateral disease. Most of us are here in order to crystallize our attitude. In short, we are afraid on the one hand to allow patients with unilateral lesions and hypertension to go on if help can be given and, on the other hand, we wish to avoid unnecessary surgery. I think that if we come down to the crux of the situation, this is our attitude.

DR. JAMES F. MCCAHEY, Philadelphia: Skepticism about a connection between the kidneys and hypertension has been engendered by what the authors have called "enthusiastic" reports. Nevertheless, such a relationship is suggested by recent experimental and clinical observations which appear to be sound. The experimental evidence has been furnished chiefly by Goldblatt. Page has described another interesting form of experimental hypertension. He found that, if the kidneys of dogs are surrounded with cellophane or silk, a fibrous hull is formed and hypertension follows. Removal of the hull causes a return of the blood pressure to normal. Performing this

procedure on one kidney only causes a moderate elevation of the blood pressure. It is evident that hypertension in human beings differs in important essentials from the experimental form. It seems established that narrowing of the lumen of one renal artery may cause sustained hypertension with serious sequelae. Nephrectomy may be beneficial. Cases of this kind are unusual and an accurate diagnosis is hardly ever possible prior to operation. Therefore, the pressing problem here is for improvement in method of recognizing cases belonging to this category. It is also evident that the disease which we call "essential hypertension" is not a surgical renal consequence. The finding by Drs. Crabtree and Chaset that vascular occlusive changes may be present in the kidney without hypertension is in accord with the opinion of Fishberg, who believes that the essential pathologic condition is generalized arteriosclerosis. Drs. Braasch, Walters and Hammer find that conservative treatment of various surgical renal lesions will often result in a lowering of the blood pressure in patients with a higher than normal reading. They report certain instances of surgical renal conditions associated with hypertension in which the blood pressure did not fall to normal after nephrectomy and interpret this as indicating that the cause of the hypertension was extrarenal. However, the possibilities that the increased vascular pressure depended on a lesion in the opposite kidney must be kept in mind, since the fact that a kidney responds normally to our present tests does not mean that it does not contain arteriolar changes which lead to some degree of hypertension. The onset of such changes in the remaining kidney may likewise explain the occurrence of hypertension some time after nephrectomy. Both papers are in agreement that nephrectomy for hypertension is indicated only in recognized renal surgical conditions. In the present state of our knowledge, this is sound policy.

DR. GEORGE W. FISH, New York: The excellent papers by Dr. Braasch and Dr. Crabtree and their collaborators form a basis for the surgical treatment of certain cases of hypertension. Both workers have arrived at essentially the same conclusions and their methods of selecting cases are marked by a fine conservatism. During the past three years, Schroeder and I have studied and done nephrectomy in a group of hypertensive patients from 16 to 32 years of age with unilateral renal lesions, at least as far as we were able to establish such a diagnosis by intravenous and retrograde urography, separate phenol red and urea clearance determinations of the kidney, and cultures of separated ureteral specimens. Even with all these tests the presence of bilateral lesions is not always ruled out. Perhaps most important of all, the time of the onset of hypertension in these cases was known, and those whose hypertension did not extend beyond two years responded most favorably. These cases were reported in the May 1940 issue of the *American Journal of the Medical Sciences*. These points and the one made by Drs. Crabtree and Chaset concerning biopsy for diagnostic purposes are brought out by a recent case: A white man aged 40 had a stone removed from the right kidney through a pyelotomy incision in February 1937; the blood pressure was 130 systolic, 90 diastolic. In August 1937 the blood pressure was 148 systolic, 100 diastolic. Two attacks of pyelitis on the right side occurred between that date and April 1939; the blood pressure was 165 systolic, 120 diastolic. I saw the patient first in October 1939; the blood pressure ranged from 212 systolic, 140 diastolic to 154 systolic, 100 diastolic. The symptoms were headaches and lassitude. Three months' observation revealed that both kidneys were functionally normal as determined by the phenolsulfonphthalein and urea clearance tests. The right kidney had some pus and colon bacilli. The left kidney was normal. Increase occurred in hypertension and the size of the heart during the observation period. Right nephrectomy was done Jan. 28, 1939. Marked fall of blood pressure occurred to normal levels. Death occurred on the nineteenth day after operation of pulmonary embolus. This and other reported cases and experimental work suggest that the sclerosis described by Dr. Braasch and his collaborators may not be the cause of the hypertension and that the hypertension may be the cause of the sclerosis. Nephrectomy may prove of benefit but, it seems, only for patients in whom the existence of hypertension is of short duration and in whom arteriolar sclerosis of the other kidney is not advanced. Its use is probably limited therefore to a small number of hypertensive patients and they remain potentially hypertensive.

DR. WILLIAM F. BRAASCH, Rochester, Minn.: One lantern slide which I did not show contained detailed information concerning the group of fourteen patients who had previously been operated on and who developed postoperative hypertension. Injury to the ureters or kidneys occurred in the course of hysterectomy, various other operations for pelvic disease, vesicovaginal fistulas, nephropexy, ureterolithotomy and nephrolithotomy. In one case, which is of particular interest, both ureters had been transplanted into the rectum and several years afterward hypertension developed. One kidney was infected and atrophic and after its removal the blood pressure returned to normal. It may be inferred, therefore, that when hypertension develops after operations involving the urinary tract the possibility of postoperative nephrosclerosis must be considered. Although the incidence of hypertension caused by unilateral surgical renal lesions is relatively low, nevertheless the more one looks for such cases the more often will one find them. It is a condition which the urologist may not see primarily because the urinary symptoms and signs are often obscure. The patient usually comes first to the internist, who often is not on the lookout for surgical renal lesions unless he is familiar with this possibility. This was well illustrated recently by a patient who came to the Mayo Clinic because of headache. The internist who examined him found hypertension, and although only an occasional pus cell was found in the urine he included roentgenography of the urinary tract among the routine diagnostic procedures. The roentgenogram was reported to be negative. The internist, however, was on the lookout for the possibility of renal disease as the cause of hypertension, so he reviewed the roentgenogram himself and saw that the outline of one kidney was definitely smaller than the other. Then he called in the urologist, who also found the difference in renal outlines and suggested that an excretory urogram be made. The urogram visualized deformity typical of atrophic pyelonephritis in one kidney and showed that the other kidney was normal. Nephrectomy was advised and the blood pressure returned to normal subsequently. This field offers the urologist one of the most promising opportunities for clinical investigation. Judging from the statistics I have shown, there can be no doubt as to the efficacy of renal surgery in reduction of blood pressure in certain carefully selected cases.

DR. NATHAN CHASET, Boston: In our study we have found severe pathologic changes without finding hypertension to any extent. The reason has not been obvious, and we have come to believe that some physiologic or chemical process initiated by the kidney is probably responsible for the production of hypertension in many cases, but that equally potent forces in the body can be marshaled to combat it. The role the kidney plays in the production of hypertension is not clear. The work of Page and his associates is probably nearer the true concept than others presented. It is as follows: Experimentally produced hypertension, either by Goldblatt's method or by the method of Page, is caused by the liberation from the kidney of an enzyme-like substance which is called "renin." Renin alone causes no hypertension. It requires a kinase-like material contained in the protein fraction of plasma and whole blood. It has also been shown that tachyphylaxis to renin develops rather rapidly, owing to exhaustion of renin activator. When tachyphylaxis develops in the presence of excess renin, further addition of renin activator does not restore the pressor effect of renin. It appears that some substance develops which prevents the combination of renin and renin activator. This has been called the antipressor state, or renin inhibitor. The interaction of renin and renin activator yields "angiotonin," a highly active pressor substance. Whereas renin causes tachyphylaxis quickly as the result of depletion of renin activator, angiotonin causes only mild tachyphylaxis after many injections. Angiotonin appears to be an intermediate rather than an end product in the interaction of renin and renin activator. It also requires an activator which differs from renin activator. The mechanisms for the production of tachyphylaxis to renin and angiotonin are interrelated. It seems to be due to the

exhaustion of their respective activators as well as to the development of inhibitors. Thus experimentally it seems that there are potent substances capable of vascoconstriction which are liberated by the kidney under certain conditions. There are also equally potent and effective mechanisms for the prevention of the vasoconstrictor action. Studies on the inhibitor mechanisms are being carried out at the present time.

TREATMENT OF COMPOUND FRACTURES IN WAR

REPORTS OF PRACTICAL EXPERIENCE IN THE SPANISH CIVIL WAR

LEO ELOESSER, M.D.
SAN FRANCISCO

It was evident to surgeons who took part in the late civil war in Spain that modern warfare was to differ greatly from previous wars and that the difference would be due to advances in the mechanics of transportation and especially to extensive use of aviation. It was apparent that surgeons had much to learn and to unlearn in matters of organization, in evacuation of wounded and also in the treatment of war injuries. Especially noticeable was distrust in chemical antisepsis. Irrigations, Dakin's tubes and the complicated ritual of antisepsis that ornamented military hospitals in 1918 were unused or forgotten. Their place was taken by extensive incisions and plaster of paris splints. Rapid military movements and the need, after the bombing of thickly populated centers, of attending great masses of wounded called more than ever for surgical methods that were rapid and safe and that permitted of prompt evacuation with a minimum of postoperative attention. Trueta has written of these methods in his monograph on the Treatment of War Wounds and Fractures. The interest his manual has aroused is evidence of our concern for military preparedness.

For this reason a few further notes based on experiences gathered during the Spanish Civil War may not be amiss.

Rapidly moving warfare dominated by aviation makes simple surgical methods imperative. The necessity of concealing formations from view from the air and of moving men, wounded and supplies quickly, often under the cover of night, compels economy of materials, space and effort. Supplies and essentials are liable to be scanty or wanting entirely, either because they cannot be brought up or because they have been destroyed. Water, especially hot water, is liable to be short; liquid solutions and glass containers are liable to be spilled or broken. However, one learns to adapt oneself, and as the late Dr. Bethune wrote from China, "I find I can get along and operate as well in a dirty Buddhist temple . . . as in a modern operating room with a thousand accessories." The necessary economy and simplicity may by foresight and preparedness work rather to the advantage than to the disadvantage of the wounded.

PREPARATION

The most satisfactory easily transportable and easily procurable skin disinfectant, both for the surgeon and for the patient, is chlorinated lime.

The surgeon cleans his hands with a cream of chlorinated lime and soda worked well into the skin with a brush. If running hot water is scarce this paste is washed off by having a tiny stream of water trickle on the hands from an irrigator or a can with a spigot. Cleansing is as thorough as though a much larger stream were used. Following disinfection with lime and soda, alcohol, iodine-alcohol or a mercurial in alcohol acetone solution makes it easier to dry the hands and to put on gloves but is not essential.

The patient is thoroughly shaved, either wet or dry, the hair being removed over the whole area which is subsequently to be encased in plaster. One applies a thick paste of chlorinated lime and soda to the skin of the operative field and removes the paste with moist gauze, working outward from the wound as a center. This really cleans the skin of sweat, mud, dirt and grease; it may then be painted with one of the usual alcoholic antiseptic solutions, iodine or a mercurial.

Draperies should be small, so that the surgeon can keep the field under his eye and watch what unskilled assistance is doing. Large expanses of white sheeting are no guaranty of asepsis but are rather in the way. Four drapes about a yard square clipped or sutured to the skin are enough. The skin edges are further protected by large moist gauze squares. A well constructed metal sacral rest is indispensable; improvisation of boxes and enamel basins is most unsatisfactory, but a fracture table is not essential. Two pairs of small pulleys in the form of a block and tackle arranged overhead with other pulleys fastened to the wall at the foot of the table are just as serviceable and much easier to transport than a heavy fracture table. However, a fracture apparatus such as a Dupuy or Zimmer apparatus makes the placing of Kirschner or Mathews wires easier.

ANESTHESIA

Some form of anesthesia is desirable in which the patient is not entirely unconscious but is able to cooperate to some extent. His cooperation makes transportation to and from the operating room easier and saves work for stretcher bearers, surgeons, orderlies and nurses. Soldiers at the front are notoriously easy to anesthetize; they are usually in good physical condition, not overfed nor alcoholic and, when wounded, are often more or less on the verge of shock, so that a little morphine, a little sedation with barbiturates and a little inhalation anesthesia go a long way toward freeing them of pain.

Thus preparation with morphine plus procaine hydrochloride infiltration around the site of injury is often all that is needed for the accomplishment of a thorough débridement and reduction of a compound fracture.

Plexus anesthesia is very satisfactory for injuries of the upper extremity. Twenty cc. of 1 per cent procaine hydrochloride plus two drops of 1:1,000 epinephrine are injected just above the middle of the clavicle; the needle is pointed toward the spinous process of the first dorsal vertebra. As it strikes the plexus, the man feels a sudden tingling pain in the fingers. One should inject the full amount of procaine solution as soon as this pain is felt, moving the needle about a little to inject the various cords of the plexus. Anesthesia follows almost immediately. If the needle misses the plexus it strikes the first rib; it should be moved about until the plexus is found. If injection is made not squarely into the plexus but around it, anesthesia may take from fifteen to twenty minutes to develop. The interval may be used to attend to other wounded.

For lesser injuries, injection around the site of injury is all that is needed.

A little ethyl chloride inhalation given when all is in readiness is sufficient for the few minutes needed to amputate a mangled arm through the site of fracture;

From the Surgical Service of Stanford University School of Medicine at the San Francisco Hospital, Department of Public Health.

the man wakes up immediately, may often walk to his bed, travel seated in an ambulance and can be given hot drinks without nausea and vomiting. It is especially important that deep general anesthesia be not used for injuries of the upper extremity, for thoracobrachial plaster of paris is easy to apply if the man is seated but difficult or impossible if he is lying unconscious on a table.

For fractures of the lower extremity, low spinal injection of 100 mg. of procaine hydrochloride dissolved in 3 cc. of spinal fluid injected while the man is seated with one or both legs hanging over the edge of the table produces an ideal anesthesia. The injured man retains the use of his arms and can help balance himself on a pelvic support while plaster is being applied. Evipal or pentothal sodium injected slowly until a light narcosis is reached is satisfactory for men who are shocked or frightened. By injecting the drug slowly, drop by drop, one can maintain a constant light narcotic level. Evipal, however, is not satisfactory in skull injuries with unconsciousness and delirium. It seems to increase the delirium and makes the wounded more unruly.

Ethyl chloride administered by dropping it, not spraying it, on an open face mask is a most satisfactory anesthetic for short maneuvers requiring good relaxation. At the moment when the patient first goes under the anesthetic, when he takes a few deep sighing respirations, the mask should be slightly lifted to allow room for plenty of air. If this is done and sudden inhalation of highly concentrated ethyl chloride vapor is thus avoided, the anesthetic is safe: there is no excitement stage and no struggling, which to wounded with fractures are harmful; relaxation is perfect, and consciousness returns without nausea or vomiting a few minutes after the anesthetic has been stopped. No other inhalation agent seems to meet all requirements for short anesthesia so well. Five minutes is to be regarded as the maximum duration of ethyl chloride anesthesia; if more prolonged narcosis is likely to be needed, ethyl chloride should not be given or anesthesia should be changed to ether. Bulky apparatus, inflammability and the need for expert anesthetists preclude the wide use of gas in advanced hospital formations.

X-RAY EXAMINATION

It is seldom necessary to take an x-ray film of a compound war fracture before débridement. Inspection of the limb before operation and of the fracture during operation usually give the needed information. Foreign bodies and the position of fragments are usually self evident in the course of a proper débridement. It is seldom necessary to take an x-ray film immediately after operation and immobilization if the operation is properly done and splints are properly applied. Radiography at the front is time consuming and cumbersome, fluoroscopy still more so.

The time and place for x-ray examination is at the evacuation hospital and farther back, at a time when fractured bone ends may have slipped or osteomyelitis and sequestration may be demonstrable.

The mobile surgical unit which I headed in Spain was equipped with a good modern portable x-ray apparatus and a dark room included in a mobile unit on wheels. They were not once used. The same was true of other advanced units which I had occasion to observe.

Conceivably radiography and fluoroscopy might be advantageous for chest wounds with suspected intrapleural foreign bodies or for abdominal wounds. It is questionable, however, whether its limited application in small advanced hospital formations calculated for rapid movement and intense activity justifies the time, weight, bulk and personnel needed for its management.

POSITION ON THE OPERATING TABLE

For injuries involving the front and sides of a limb, the wounded are placed on their back; if both front and back have to be dealt with, the limb is elevated or suspended so that the posterior surface is accessible. The man may also temporarily be placed on his side, but the fracture is likely to be considerably displaced in this position.

The arm may be placed on the operating table at the side of the wounded or laid across the chest; it may be held suspended from a pulley or abducted on an arm board or on a side table. It should be placed in the position in which final reduction is likely to be most easily accomplished and maintained. Draperies should not be so bulky that the fracture may be displaced by their removal; they should allow access to the arm and hand so that slings and pulls may be applied for maintenance of position while the limb is being splinted. The same consideration holds good for fractures of the lower extremity. The patient lies on his back; if the posterior surface of the limb is injured it may be placed in a Böhler frame or held suspended by slings and pulleys to allow access from underneath. In any event slings are best laid under the limb before débridement is begun so the fracture may not be displaced later.

In amputation much blood can be saved and the tourniquet dispensed with if the limb which is to be amputated is suspended vertically upright from an overhead pulley by a clove-hitch passed around the ankle or the wrist. All its venous blood is returned to the circulation in this position, while with a tourniquet, however quickly and efficiently it may be applied, some venous stasis occurs while it is being tightened and the venous blood in the limb is lost.

DÉBRIDEMENT

After everything is properly prepared and in readiness and not before, operation is begun; shaving should be complete, draperies adjusted with a view to their subsequent removal, slings and traction apparatus applied or laid under the limb ready for application; for it should be remembered that after débridement the soft parts and bones are to lie in the position which they are to maintain during healing. It is distressing both to the wounded and to the surgeon to see the limb jostled and moved during the application of retention apparatus, splints and bandages often to an extent that should call for a new débridement before the plaster is finally applied. A tourniquet usually makes accurate inspection and operation easier. It should be used only if it can be rapidly and efficiently put on. It can be kept from slipping down on the limb by a towel clip through the skin or one or two sutures. A pneumatic sleeve is the best tourniquet for the arm, a wide rubber tube or an Esmarch bandage for the thigh.

Everything being in readiness, local, spinal or general anesthesia having been induced, the skin edges are excised in the classic manner, retractors are inserted and held gently but firmly, devitalized muscle, contaminated bone chips, foreign bodies, missiles and pieces of clothing are removed. Special attention is paid to visible shreds of clothing and dirt. The position of the limb on the operating table is likely to differ greatly from that which it had when the missile struck it. Contaminated particles may be dragged up and down from

a line drawn between the wound in the skin and the fracture; soft parts, muscle and fascia may have slid one over the other, occluding the tract. In order to lay all of these recesses wide open, the skin and fascia should be widely incised so that the recesses are not under tension and forcible retraction is not necessary to expose them. If forcible retraction is necessary at the time of débridement, the wound will be under tension later. Wide incisions into skin and fascia are unimportant and can be repaired perfectly; insufficient ones are very important and will determine future loss of the limb, sepsis, spreading osteomyelitis, gas gangrene and phlegmons of the soft parts. If the unimportant superficial structures of the skin and fascia are widely incised, more important deeper structures, muscle and bone, will be spared.

The wound should not be dabbed, rubbed and prodded with gauze sponges. If vessels bleed and it is necessary to use gauze in order to see them, the wound should be firmly compressed with a piece of flat gauze held in the fingers; the gauze should then be slowly rolled back until the bleeding point can be seen and caught with a hemostat. Wiping the wound with gauze makes it bleed more and wipes dirt into its crevices.

Necrotic and contaminated muscle should be excised; severed and contaminated nerve ends may be freshened and brought together with a single fine black silk suture left long and allowed to hang out of the wound if it is thought that suppuration is inevitable, or cut short if it is thought that the wound may heal. Formal accurate perineural nerve suture is rarely indicated.

Severed vessels should be caught and tied. Arterial suture is almost never possible or permissible. A compound fracture with a cold pulseless limb calls for amputation unless exceptional vigilance is possible during the first few days after injury.

Tendons lying in a contaminated area may be allowed to remain if they can be cleaned and covered by clean viable soft parts not under tension. If they are severed, their clean freshened ends may be approximated by a single suture and similarly covered. If it is not possible to cover them they had better be allowed to retract into their sheaths, for if they remain exposed in a wound they will certainly slough. More of them will be saved for secondary suture later if they are allowed to retract.

Open and exposed joints should be similarly covered. If it is possible to sew clean synovia over them without tension, their function may be preserved, but in no case should they be covered by skin sutured under tension.

Entirely loose fragments of bone should be removed. Grossly contaminated bone ends from which the periosteum has been stripped should be removed with the rongeur until clean covered bone appears. Grossly contaminated periosteum should be removed.

If the bone ends hold their position without internal fixation, so much the better. If they tend to slip they may be held by a wire passed through drill holes if it is possible to drill the holes without stripping the periosteum and traumatizing the fracture by dislocating its ends from the wound. Oftener it may be possible to grasp the bone ends and hold them approximated with a towel clip, which should be left in the wound. If its branches cannot be closed, the handles may be tied together with a piece of silk or twine. Only if a bone is widely exposed and will obviously sequestrate is it permissible to use metal plates, which should lie fully exposed in the surface of the wound. Their application in the depths of a wound entails needless trauma and exposure of the bone.

Whether packing should be placed about the fracture depends on the extent and duration of contamination and the completeness of débridement. More or less sequestration will almost certainly ensue if the fracture is surrounded by gauze packs. If it is possible to surround it with soft parts without tension, it may heal without suppuration.

A few sutures are permissible when it seems expedient to cover vulnerable structures—tendons, cartilage, blood vessels—which die when exposed or which it is dangerous to allow to remain so. Such sutures should be of fine 00 or 000 catgut or fine silk (if the operator is incorrigibly silky) and should not create tension. If liberating incisions cannot loosen the parts to be sutured, suture had better be withheld.

If all structures lie perfectly loose and naturally, packing may be omitted. If contamination of the fracture site is such that the wound must be left unclean, it may be better to introduce a pack of iodoform gauze or plain gauze. In any event, it seems, in the light of newer experience, that it may be wise to sprinkle the wound liberally with sulfanilamide powder.

During the whole operation, which frequently it does not take as long to perform as it does to tell about, instruments should be changed or wiped and cleaned constantly with moist gauze. This applies especially to scissor blades and the teeth of tissue forceps. The gauze should be discarded each time, and no sponge or gauze should be introduced into the wound twice. Ample incision into the skin and easy exposure will make débridement, even of extensive wounds, not too time consuming.

SUTURE

After each débridement the question arises "Shall the wound be closed by suture?" The answer is usually like Thackeray's to the young man about to marry: Don't. If the pros and cons are weighed each time, the cons will so outweigh the pros that there will be little doubt what to do. The pros reduce themselves to the advantage of a small linear scar—a negligible advantage. Shortening of time of hospitalization scarcely comes into question, for even though the wound is left open and allowed to granulate it will be closed or may be closed by secondary suture or skin grafting by the time the fracture is consolidated. The contras are overwhelming, for it will rarely be possible, in spite of the promptest and most complete débridement, to assure asepsis in extensive war injuries that warrant the performance of a débridement at all. And if such wounds are closed by skin suture producing even the slightest tension, danger to life and limb is great. In the best of events, if suppuration ensues, hospitalization will be measured in terms of years instead of months. Exception may be permissible in wounds of the hand, wrist and ankle, when the danger of serious sepsis is not great, when the skin can be approximated without tension and when valuable tendons will slough unless they are covered.

The wound is covered with small dressings of sterile gauze and the limb is immobilized for evacuation. In wounds that are likely to bleed, sterile gauze is preferable to Orr's petrolatum pack; wounds covered with petrolatum ooze and bleed much longer than when covered by sterile gauze.

APPLICATION OF PLASTER SPLINTS

The use of plaster of paris may justify a few generalities. In surgery, as in every other art, each material calls for its own technic and what is valid for one medium may not be so for another.

In the United States plaster of paris is used on crinoline or starched gauze bandages; in Spain and France plain unstarched gauze bandages are used. Crinoline plaster bandages have more body and are easier to apply without wrinkles; however, their starch content delays setting and makes it necessary to use rapidly setting plaster of high quality (alabaster or dental plaster) if the cast is to set reasonably quickly. The casts are probably not quite so hard but are tougher than the ones made with unstarched bandages. Plaster on plain unstarched gauze is somewhat more difficult to apply smoothly, especially for those used to starched bandages; however, it sets more quickly without the starch, so that slower plaster of inferior quality can still be used satisfactorily. The casts are harder but more brittle than those with starched bandages; they are likely to be a little thicker. In France and Spain flannel cut to a pattern and immersed in a plaster cream is occasionally used. This is especially useful for jackets, body casts and half body casts (plaster shells). It saves time and trouble when properly applied. For general use when good plaster is available the crinoline bandage is probably preferable; if plaster of a poorer grade, and ordinary commercial plaster such as can be bought at most lime kilns, is all that can be had, unstarched plain coarse mesh gauze bandages are better.

Plaster of paris bandages conform to the shape of the body by being molded to it; they have no elasticity and cannot, like gauze or flannel bandages, be pulled or stretched into shape. Their cohesiveness is great; they will not work or slip or stretch. Every crease and every wrinkle in them becomes petrified when the plaster sets and will cause intolerable pressure if it overlies a bony prominence. To pad plaster with absorbent cotton or some such material is to frustrate the purpose of plaster. It will immobilize imperfectly, for the limb will work up and down in its cotton sheath; it will be more and not less likely to cause pressure sores, for it is impossible to mold it accurately to the limb if it is separated from it by an uneven surface, such as that of cotton padding; and lastly and most important the immobilization due to the plaster sticking to the underlying skin is lost, and traction against muscle pull can be secured only by pressure of the plaster splint against flaring surfaces, such as the knee, the ankle, the dorsum of the foot, the heel and the hand below the wrist, instead of being equally distributed throughout the whole limb, as when plaster is applied directly to the skin.

It is obvious that some way of holding a limb must be devised that will keep it in position while the plaster is being put on. It is equally obvious that unless the limb will hold its position by itself, which it will not often do in fractures, its position cannot be retained by the hands of an assistant, for he must let go each time a turn of bandage or a splint is to come between his hands and the patient's skin. Some form of traction is necessary which can hold its place, at least until the plaster hardens, a metal pin, a bandage or some material that can be incorporated into the splint or retain its position under it. It is obvious again that the hands of an assistant do not meet these requirements. Plaster should be applied with regard for what it can do and what is required of it, and (especially in advanced hospitals where the wounded cannot be kept under observation) with more of an eye to what the next few days, weeks and months may bring than with regard to the needs of the moment.

The limb is kept in position by suspending it or pulling on it with bandages which are greased and are incorporated into the cast but are withdrawn before the man leaves the operating table, for they will cause pressure if allowed to remain. Or at times metal pins may be convenient. The need for these will not be great if unpadded casts are used. Traction should not be too forcible if there has been much loss of osseous substance, for a wide gap between bone ends is likely to lead to nonunion. The perfect relaxation of spinal anesthesia increases the risk of wide distraction.

Dressings should be small, just large enough to prevent plaster of paris from leaking into the open wound; they should be held in place by a few small narrow strips of adhesive and not by a bandage encircling the limb; slings should not be too wide; as much skin as possible should be left uncovered for the plaster of paris to adhere to. Painting the area around the wound with compound tincture of benzoin will prevent acne pustules from old wound secretions and help dressings and plaster to stick to the skin.

The plaster should be applied with due regard for the stresses and strains involving both the fracture and the neighboring joints. Lateral strips are laid on first, a few layers at a time, two or three, not more than four. The fit of the cast depends on the neatness and accuracy of these inner layers. They are molded with the hand to the shape of the limb. Creases and folds are removed by notching the strips or removing a V shaped dart, so that the plaster lies perfectly smooth. A half dozen layers or so are laid on and allowed to set a little; reinforcements are added by using shorter strips at the site of fracture or at the joints or by laying on longer strips folded lengthwise. After these longitudinal strips are hard enough to retain their shape and not buckle or dent, they are held in place by a circular bandage one layer only in thickness; no turns or folds are made in this bandage, but it is cut across and started again as soon as it ceases to run smoothly over the longitudinal strips and the limb. Care should be taken that the layers do not accumulate at the bend of the knee and the elbow. It is just here, where pressure is most likely to be harmful, that several layers of circular bandage are likely to overlap. When additional reinforcement is thought necessary, because the man is unusually robust or heavy or because profuse drainage is likely to wet the cast at the site of fracture or because transportation is likely to be long and hard, metal material may be added, but only after the cast is dry enough to resist pressure. If metal reinforcements are added before the plaster is quite set they will dent it and cause pressure points. Cramer splints (wire ladder splints) are particularly likely to do this. The metal, if rationally applied, need be only light and thin. Strips an inch wide cut from an ordinary tin can are just right. They can be bent and molded by hand to fit the cast accurately. If they do this they are stronger than heavier metal which cannot be accurately applied. They are firmly attached to the surface of the cast with a single layer of circular plaster bandage pulled tight. They are placed at the level of the fracture or over joints so that their width resists bending strain; i. e., two pieces at each side of the knee, three or four pieces around a fractured femur, two pieces laterally for leg fractures. If thin aluminum sheeting is at hand this is to be preferred, being pervious to the x-rays. The cast may be made thin in certain spots so that it can break; e. g., it is desirable to put a few spica turns around the hip and pelvis in high

fractures of the leg, but it is not necessary to immobilize the hip. The cast should be thin at the hip so that it can break here. The ankle should be included in casts for fracture of the femur; but, if the cast is thin at the ankle, motion may be preserved.

Suspension strips and especially hitches about the wrist and ankle must be removed before the man leaves the operating room. If the cast inclines to bend or buckle at the point where it is cut for their removal, reinforcements may be added.

Finally, as long as the wounded can be constantly and carefully watched in the same hospital the circular turns may be allowed to remain; if, however, débridement and immobilization are only preparatory to prompt evacuation, before the man leaves the hospital the circular turn should be slit all the way either up the front or the back of the limb and the cast should be wrapped not too tightly with an ordinary gauze bandage. The cast will be less likely to break if it is thoroughly dry before it is slit, if it is possible to wait twenty-four hours, but it should be slit before the wounded man is evacuated, even though it is not thoroughly dry. In dubious wounds it is better not to wrap the cast but to slit it and leave it open. If this is done there need be little fear of constriction or gangrene.

In fractures of the leg the cast is ordinarily applied with the leg lying flat on the operating table; lateral strips are first laid on, as far posteriorly as possible, they are allowed to set, and the circular bandage is then applied. If the leg lies on a rubber sheet the circular turns can be slid under it without lifting it from the table.

Fractures of the femur are put up with the man placed on a sacral rest, his shoulders supported by a box of equal height; the leg is held suspended from overhead pulleys with the knee slightly flexed; traction is made on the ankle by means of a hitch; another sling about the site of fracture keeps the femur from dishing. In the absence of overhead pulleys and in a pinch the femoral sling and the sling about the knee may be held by an assistant who stands on the table, one foot at each side of the fractured femur, facing the patient's feet. He brings the slings about his neck while his back is a little bent; as he straightens up the slings are tightened and the extremity lifted. A thick cotton pad is placed over the abdomen before the plaster is applied to allow for distention.

Fractures of the arm and forearm are put in plaster with the patient seated, on a stool if possible, on the operating table if not. It is almost impossible to put on a thoracobrachial plaster splint with the man lying on his back; hence the need for avoiding ether or prolonged gas anesthesia. The so-called airplane splint, with the shoulder abducted at 90 degrees, is never used. Such a splint, whether of metal or of plaster, works only when the man is flat on his back; when he is up or has his head raised in bed the weight of the splint causes a valgus angulation of the humerus and produces the deformity it seeks to avoid.[1] If transportation is to be comparatively easy, the arm is put up in 45 degrees abduction or less, with the forearm at right angles to the body in the sagittal plane; the cast should include the chest, both shoulders and the arm to the wrist with a turn or two around the hand, in what is known as the Bastos position, after Bastos, formerly professor of surgery at Madrid, now prisoner in a fascist concentration camp. Care should be taken not to tighten the turns about the chest; before they are applied the man should be called on to blow his chest up. If he cannot do this the lower part of the chest should be padded. The cast may be reinforced by a stick of wood or a Cramer splint leading from the chest to the elbow. It is not easy to apply and, unless it is fairly heavy, is likely to break at the elbow and no great matter. The weight of the forearm sticking out at right angles to the body tends to twist the whole apparatus outward in order that the arm may drop inward. The projecting forearm makes transportation somewhat awkward; the man is likely to be jostled and bumped unless he is seated, when his knees protect the forearm. If, therefore, evacuation is likely to be troublesome it may be better to let the man carry his arm at his side and his forearm across his chest in a sling. Cotton pads are put under the arm and between the forearm and the chest; the sling, arm, forearm and chest are then encircled with a few layers of plaster of paris applied circularly. This position creates an inward rotation deformity of the lower fragment, but it makes evacuation easier, particularly if the man is to lie recumbent, to walk or to stand. The rotation can be corrected later on reaching the base and a Bastos splint applied in correct position. The man should be tagged to this effect when he is evacuated. Evacuation in a 90 degree abduction splint (airplane splint) is torture to all concerned.

490 Post Street.

1. Howard, N. J., and Eloesser, Leo: Treatment of Fractures of the Upper End of the Humerus, J. Bone & Joint Surg. **16:** 1 (Jan.) 1934.

EPIDEMIC MENINGITIS

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In this discussion the term "epidemic meningitis"[1] is applied to all patients suffering from meningococcic infections. It does not include carriers but does embrace instances of meningococcemia whether with or without clinical evidence of meningitis.

The contention is made sometimes that this disease is much more severe in the presence of an epidemic than among sporadic or endemic cases. On the basis of my own experience during a number of years, such a view is not acceptable. It is even quite possible that during an extensive outbreak many patients may suffer from attacks that are not extremely severe. Consequently the case fatality rate may be comparatively low. On the other hand it is not unusual to have admitted to our contagious disease hospitals patients with a fulminating type of infection at a time when there have been few reports of the disease. Under the latter circumstances the fatality rate is generally very high.

The foregoing explanation is descriptive of the situation as it has existed in Chicago. Since 1937 the incidence of epidemic meningitis has not been great compared to the years 1927-1935.[2] Nevertheless the percentage of severe cases has attained a high level. In this connection I observed several years ago, when serum was given intraspinally, what appeared to be a paradoxical situation. There was a higher death rate

From Cook County (Contagious Disease Department), Municipal Contagious Disease (Chicago Health Department) and Children's Memorial hospitals.

Read in the panel discussion on Some Contagious Diseases before the Section on Pediatrics at the Ninety-First Annual Session of the American Medical Association, New York, June 13, 1940.

1. Hoyne, A. L.: Meningococcia (Meningococcic Infection): New Remedy, Arch. Pediat. **52:** 418 (June) 1935; The Treatment of Meningococcic Infections, ibid. **53:** 164 (March) 1936.

2. Hoyne, A. L.: Meningitis, J. Iowa M. Soc. **26:** 549 (Oct.) 1936.

among the patients who were treated early than there was for those who entered the hospital late in the course of the disease. The solution for this occurrence lay in the fact that, as a rule, a prompt diagnosis was established when meningitis was of a fulminating type and as a result treatment, which often proved futile, was instituted at once. But if the patient suffered less severely and especially if no petechiae were seen, several days often elapsed before a physician was summoned and hospitalization ordered. Perhaps then because of the patient's natural resistance or the type of infecting organism, appropriate measures were successful in bringing about recovery.

TABLE 1.—*Epidemic Meningitis at Cook County Contagious Disease Hospital*

Year	Patients	Deaths	Lumbar Punctures	Average Lumbar Puncture	Fatality Per Cent
1937	60	18	127*	2.1	30.0
1938	26	2	25†	0.9	7.6
1939	13	2	25‡	1.9	15.3
Total	99	22	177	1.7	22.2

* Includes fourteen punctures prior to admission.
† Includes ten punctures prior to admission.
‡ Includes four punctures prior to admission.

TABLE 2.—*Epidemic Meningitis at Municipal Contagious Disease Hospital*

Year	Patients	Deaths	Lumbar Punctures	Average Lumbar Puncture	Fatality Per Cent
1937	5	2	31	6.2	40.0
1938	13	3	14	1.0	23.0
1939	8	0	9	1.1	0
Total	26	5	54	2.0	19.2

Often in the past we feared the outcome for the patient with petechiae. Meningococcemia frequently suggested a fatal prognosis. In many such instances there was little or no rigidity of the neck. Yet even without meningeal signs it was a common practice, and still is in some localities, to make a lumbar puncture and administer specific serum. This procedure was carried out even if the spinal fluid appeared normal and no organisms were found. But after the introduction of serum intrathecally the cell count often increased and meningococci became numerous. The irritative effects [3] of the serum caused meningitis to be plainly evident. Stiffness of the neck if not present previously now existed and opisthotonos frequently became pronounced with the repetition of intraspinal treatment. The foreign substance (serum) entering the spinal canal increased the permeability of the meninges, and subsequent withdrawals of spinal fluid fulfilled all expectations for a bacterial meningitis. Then future attention was focused on the contents of the spinal fluid. It seems to me that there is often too much anxiety regarding the spinal fluid while insufficient thought is directed toward the condition of the patient. It is really the patient whom we wish to treat, not his spinal fluid. In 1934 I abandoned all forms of intraspinal treatment and never have had any cause to regret such action.

For several years antedating the introduction of sulfanilamide, the procedure [4] was as follows: (1) blood for culture from each patient, (2) spinal puncture deferred for patients with petechiae, (3) diagnostic lumbar puncture for every meningitis patient without petechiae. In each instance an effort was made to estimate the amount of antimeningococcus serum or meningococcus antitoxin that would be required to bring about recovery. Just as with diphtheria antitoxin, dosage was based largely on one's experience. Severity and duration of the disease received primary consideration; age was sometimes a factor. Meningococcus antitoxin was given in doses of from 60,000 units (180 cc.) to 100,000 units (300 cc.). For an infant the smaller dose might suffice. If antimeningococcus serum was selected the dose usually varied from 150 to 300 cc. In either instance the antitoxin or serum was diluted with 10 per cent dextrose in saline solution of at least equal volume but preferably double or more the volume. It is important to have the dextrose in saline solution; otherwise the serum may precipitate. To this mixture from 0.5 to 1 cc. of epinephrine hydrochloride was added. The mixture at body temperature was then ready for administration by the drip method. When this plan is followed the flow should be started very slowly but can soon be increased to at least 60 drops a minute. If there is not marked improvement within twelve hours, the treatment should be repeated. By this method I have given as much as 1,200 cc. of horse serum (antitoxin) within four days and seen the patient make an excellent recovery without complications.

In 1935 [5] for seventy-six consecutive patients with meningococcic meningitis treated at the Cook County Hospital and Municipal Contagious Disease Hospital the fatality rate was 11.8 per cent. All these patients were treated intravenously in the manner described without intraspinal therapy. In another group of fifty-four patients similarly treated the fatality rate was 9.2 per cent and the rate for thirty-six of that number who were 20 years of age and less was only 2.6 per cent. At Children's Memorial Hospital the laboratory has reported sterile spinal fluids within forty-eight and seventy-two hours following the administration intravenously of large doses of meningococcus antitoxin. In each instance a prior culture had been positive. These results are not cited with the thought that intravenous serum therapy should be used to the exclusion of sulfanilamide. They are presented for the purpose of

TABLE 3.—*Epidemic Meningitis at Children's Memorial Hospital*

Year	Patients	Deaths	Lumbar Punctures	Average Lumbar Puncture	Fatality Per Cent
1937	6	1	17	2.8	16.6
1938	2	0	3	1.5	0
1939	1	0	2	2	0
Total	9	1	22	2.4	11.1

One child died in admitting room ten minutes after entering; this patient not included.

TABLE 4.—*Epidemic Meningitis at Three Hospitals: Combined Tables*

Year	Patients	Deaths	Lumbar Punctures	Average Lumbar Puncture	Fatality Per Cent
1937	71	21	175	2.4	29.5
1938	41	5	42	1.0	12.1
1939	22	2	36	1.6	9.0
Total	134	28	253	1.8	20.8

3. Hoyne, A. L.: Meningococcic Meningitis: Importance of Intravenous Therapy, Illinois M. J. **68**: 307 (Oct.) 1935.

4. Hoyne, A. L.: Intravenous Treatment of Meningococcic Meningitis with Meningococcus Antitoxin, J. A. M. A. **107**: 478 (Aug. 15) 1936.

5. Hoyne, A. L.: Treatment of Meningococcic Meningitis Without Intraspinal Therapy, Nebraska M. J. **21**: 321 (Sept.) 1936.

emphasizing that those who depend solely on the use of sulfanilamide for the treatment of epidemic meningitis are not injecting an irritative serum into the intrathecal sac. This fact receives scant thought when spectacular results are attained by the administration of sulfanilamide by mouth or subcutaneously. To me

Fig. 1.—Child in coma, petechiae numerous, on April 27, 1938, fourth day of disease.

it is an extremely important factor in sulfanilamide treatment when the drug is given in the customary way. In the contagious disease hospitals in Chicago and at Children's Memorial Hospital, no intraspinal therapy is adopted for any kind of meningitis patients. Eventually, I believe, no one with experience will administer serum intrathecally.

From 1937 to 1939 inclusive ninety-nine meningococcic patients were treated in the contagious disease department of the Cook County Hospital, Chicago. The ages varied from 6 months to 62 years and the total number of deaths was twenty-two, or a fatality rate of 22.2 per cent. These figures include all patients regardless of how soon death occurred following admission. Of the entire group, twenty-seven patients were treated exclusively with meningococcus antitoxin, twenty-two with standard antimeningococcic serum, fifteen with sulfanilamide and two with sulfapyridine. The remainder received various combinations of serum, antitoxin and sulfanilamide. There were only three patients who

Fig. 2.—Close-up of figure 1, showing massive purpuric eruption of legs.

had any intraspinal treatment. Two of these were given this form of therapy prior to admission. All three are included among the deaths. From September 1937 to March 1938 there were twenty-eight consecutive patients without a death. During the same years there were sixteen patients treated without any lumbar punctures. In each instance the diagnosis was confirmed by blood culture. In the latter group there were two deaths. Patients with meningococcemia and little or no evidence of meningitis sometimes do better when no intrathecal punctures are made. Within the past few years we have treated approximately forty patients in this manner.

Even though the meningococcic patient has both clinical and bacteriologic evidence of meningitis, frequent lumbar punctures for the purpose of drainage are not required. In fact, one's aim should be to make as few punctures as possible. One lumbar puncture when necessary for diagnosis is often sufficient. No permanent benefit is derived by making numerous taps with the object of relieving intracranial pressure. With each

Fig. 3.—Bright appearing baby with petechiae fading on May 4, eleventh day of disease, one week after intravenous treatment.

successive puncture the quantity of spinal fluid withdrawn is likely to be greater unless a block occurs, which is less likely to happen if there has been no intrathecal treatment. Frequent drainage is more apt to promote hydrocephalus than to prevent it. The fewer the punctures, the fewer the hospital days. Most of our patients are well in less than two weeks.

In the accompanying tables 134 meningococcic patients are enumerated. They were divided among three hospitals and for the most part treated in the manner described. The number of lumbar punctures in relation to the recovery rate for the different years is a matter of interest, though not necessarily significant. None of the surviving patients developed any serious complications after treatment was commenced. There was only one recurrent case. This was a man treated exclusively with sulfanilamide and whose recovery had appeared to be complete. None of the patients were given any opiates. Among the 134 patients there

were seventeen 1 year of age or less and only two deaths in this group. There were eleven patients more than 35 years old with three deaths. The fatality rate for all 134 patients was 20.8 per cent.

No detailed description of sulfanilamide treatment seems necessary here. Its great value is unchallenged but in many instances an initial dose of serum or antitoxin intravenously seems well worth while. Intravenous therapy then may be followed by the administration of sulfanilamide orally.

REPORT OF CASE

An example of what may be accomplished without intraspinal therapy is illustrated by the case of V. L., an 8 months old boy:

The baby was admitted to Children's Memorial Hospital on the first day of his illness. A lumbar puncture, which might properly have been omitted, disclosed a clear spinal fluid under normal pressure with a count of 10 cells, mostly lymphocytes. No organisms were seen on smear but the culture was positive for meningococci. The blood culture was also positive, and gram-negative organisms were isolated from lesions in the skin. The temperature ranged between 99 and 106 F. during the first three days. A total of 120,000 units of Ferry's meningococcus antitoxin was given intravenously within the first five days. Small doses of sulfanilamide, from 2½ to 10 grains (0.16-0.65 Gm.) every four hours, were also administered intermittently for twenty days.

A second lumbar puncture was made on the twenty-fourth day of illness. In this instance the spinal fluid was also clear. The cell count was 9 and the culture (at the end of forty-eight hours) was negative. Results of the two lumbar punctures are convincing proof that no intrathecal taps were required.

Photographs taken on the fourth and eleventh days of the disease are indicative of the rapid progress toward recovery after intravenous treatment. There were no complications other than scarring at the sites of the cutaneous lesions.

SUMMARY AND CONCLUSIONS

Intraspinal therapy is to be condemned and the intravenous route advised if an antiserum is used.

Fifty-four patients with a fatality rate of 9.2 per cent were treated exclusively with antitoxin intravenously.

Spinal puncture may be necessary only for diagnosis.

Frequent lumbar punctures for drainage are not to be advocated.

Approximately forty patients were treated without any intrathecal punctures.

The success of sulfanilamide therapy is to be attributed in part to the fact that ordinarily no intraspinal treatment is administered.

Permanent benefit for the relief of intracranial pressure by means of spinal fluid withdrawal is questionable.

Antitoxin or serum and sulfanilamide combined is recommended for superior treatment. Good results may be obtained with either one alone without intraspinal therapy.

Advantages which may be expected from the treatment of meningitis without intraspinal therapy are lower fatality rates, more prompt recoveries, few, if any, lumbar punctures required, minimized complications, opisthotonos rare, blockage problems unusual, intracranial pressure signs not observed as frequently as when numerous punctures are made for withdrawal of spinal fluid, discomfort and pain diminished, secondary infections as a result of many spinal taps eliminated, chance of injury to intervertebral disks reduced, hospitalization time shortened and recurrence of infection seldom observed.

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THE TEN COMMANDMENTS FOR THE TREATMENT OF COMPOUND FRACTURES

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LINCOLN, NEB.

Increasing interest in this important subject is evidenced by the recent frequent contributions to medical literature. What was learned from the last World War, plus the increasing number of casualties from modern transportation, farm and industrial accidents, has made possible a clear conception of what is demanded in the way of treatment for compound fractures. The fact that perhaps more than 95 per cent of compound fractures are given first aid by laymen and surgical attention by general practitioners rather than by orthopedic and fracture surgeons presents an important challenge to these specialists to maintain constant refreshing interest essential to insure the general application of the basic principles of treatment, not only among physicians but among first aiders as well. Too often first aid and initial medical treatment is inadequate and responsible for unnecessary secondary trauma to an extremity. In other words, it is the man who attends the case in the first six to ten hours who determines the success or the failure of treatment. The specialist gets the wreckage for salvage.

The difficulty in standardizing methods is the fact that each compound fracture offers a different problem from every other compound fracture, sufficient to tax the judgment of the best trained surgeons. No single program or procedure is adaptable in all cases. Elbert H. Caldwell [1] aptly comments "The result of any procedure depends as much on the surgeon and his application as on the merits of the procedure." There are, however, virtues in almost every procedure that might be applicable under certain circumstances. Therefore, to treat compound fractures one must be broad minded and honest but critical in one's judgment and evaluation of procedures and apply them as the need arises.

The objects of treatment should be [2] (1) to care for the general condition of the patient, (2) to obtain healing of the broken bone with the best possible alinement of fragments and the least possible impairment of function and (3) to prevent or control infection. Therefore any recommended procedure of treatment for such serious and potentially serious injuries as compound fractures should comprehend every phase that would in any way favorably influence the outcome of the case.

Purely for the sake of impressing myself with the importance of a routine procedure to follow in the treatment of compound fractures, I have called my rules "the Ten Commandments for the treatment of compound fractures." Not like the original commandments, however, which have stood the test of time, these commandments have been changed with our changing ideas and methods; but in the main they have served as a constant reminder against omission and commission. Every commandment will not apply to every compound fracture, but good judgment and experience will check out the unessential.

Read before the Section on Orthopedic Surgery at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

1. Caldwell, E. H.: The Treatment of Compound Fractures, Arch. Surg. **35**: 368 (Aug.) 1937; Am. J. Surg. **43**: 554 (Feb.) 1939.
2. Darrach, William: Compound Fractures, Arch. Surg. **40**: 821 (May) 1940.

FIRST COMMANDMENT.—*Splint and immobilize a compound fracture at the scene of the accident and transport the patient with celerity and great care to a hospital adequately equipped for treatment.*

It is deplorable that the first step is usually carried out by laymen who are inexperienced and overzealous well wishers and that the average ambulance called is unequipped or the physician who is summoned is untrained to meet this situation. The work of the various organized fracture committees has scarcely scratched the surface in stimulating in the minds of the populace the importance of this vital commandment in regard to first aid care and the relation that it bears to the ultimate end result. Much more can be done in the way of education along this line.

Although the patient may not exhibit apparent evidence of shock as he lies by the ruins of an overturned car, this is a potential complication of every severe compound fracture. Therefore it is important to keep him warm and protect him from the elements while waiting for an ambulance or physician. The protection of secondary trauma during transportation is best prevented by adequate 'splinting where he lies,' with Thomas (for lower extremity injuries) and Murray-Jones (for upper extremity injuries) splints in the approved manner. If these are not available, wooden splints, taking in the joints above and below the site of fracture, are acceptable. Gentle handling is most important. If the compounding is from within, outward traction is less desirable, as there is always the possibility of carrying contamination into the depths of the wound. However, with early débridement it is not of vital importance that a first aider diagnose and distinguish whether the compounding is from within or from without. The important thing, after all, is the immediate immobilization with moderate traction and the rapid transportation to a hospital where adequate care can be given. The most that should be done to the wound is the application of a sterile dressing, if available. A tourniquet or hypnotic may be necessary as an immediate first aid measure.

SECOND COMMANDMENT.—*Make an emergency case out of every compound fracture, giving the earliest possible adequate treatment.*

Admission to the hospital should imply emergency attention in the operating room and an x-ray examination with a portable machine. Minutes and hours must be economized for success. Prompt cooperative efforts among the surgical, resident, operating room and x-ray staffs are absolutely essential. I believe that the only exception to this routine is when the severity of the injury is such that shock is, in the experienced judgment of the surgeon, such a complicating factor as to warrant delay for resuscitative measures. It often pays to wait long enough to give 1,000 or 500 cc. of 5 or 10 per cent dextrose solution, or even a transfusion, than to subject a shocked patient to a long anesthetic and a surgical procedure. Usually an hour or two at the most after arrival at the hospital is sufficient for such resuscitation. In cases of severe compound fractures of the bones of children and of elderly persons, the potential factor of shock makes delay for restorative measures of major importance. Those in the extreme age groups are more susceptible to shock than the adult in the in between group and should be given the greatest consideration.

However, the chances of eliminating infection are reduced with each hour of delay. From six to ten hours after the accident, infection has gained a foothold in the tissues and is hard to combat. Examination, palpation and manipulation, which lend themselves to unnecessary roughness and possible secondary trauma, are to be avoided. Inspection and x-ray examination should prove sufficient to justify sound judgment and decision with respect to a suitable modus operandi. When the splints are removed the position and traction should be maintained on a fracture table or other traction apparatus. A general anesthetic is usually preferable.

THIRD COMMANDMENT.—*Scrub the limb about and away from the wound with green soap and flowing sterile water for ten minutes.*

After the patient has been anesthetized, the splint removed and traction established by manual holding or by a traction device on a fracture table, a dry shave should start preparation of the extremity. With sterile hands and scrub brush the surgeon continues the preparation of the extremity by scrubbing with green soap and a stream of flowing warm sterile water from an elevated jar through a sterile tube. The water should drain away from the wound, which should be protected by frequent changes of dry sterile gauze dressing. (Ether or benzine may be used to remove grease from the skin.) Next the wound itself is superficially irrigated with warm water or physiologic solution of sodium chloride and the foreign material and clots allowed to be washed out. A sterile gauze dressing is placed on the wound and the cutaneous surface is painted with a mild antiseptic (merthiolate, metaphen or weak tincture of iodine). The area is now draped in the conventional manner.

FOURTH COMMANDMENT.—*Debride every wound thoroughly with proper respect for anatomic structures and close those wounds which experienced surgical judgment seems to justify.*

No matter how small the wound, and whether from within or from without, conservative, intelligent débridement carries a tremendous influence in obtaining a clean wound. A puncture wound may carry clothing, leather or dirt into the bony fragments. Even though the wound is separated from the fracture by muscle or fascia, if infected material is carried in, the fragments may ultimately be involved. The added trauma of débridement and cleanup to the skin and superficial soft tissues of the underlying area will in no wise influence primary healing. An understanding of what constitutes a thorough débridement is essential. The operator, with a sharp scalpel, should start at a point farthest away from the dependent portion of the wound and remove not only the cutaneous edge but also attached injured and devitalized tissue. Next, clots and foreign material are picked out; devitalized, lacerated muscle tissue and shreds are removed by sharp dissection. A constant stream of warm sterile physiologic solution of sodium chloride aids in cleaning out the débris and in pointing out, by freshening the structures, further injured tissue shreds to be removed; bleeding points can be spotted and injured nerves and tendons identified. As the bleeding points are spotted they should be tied off but should not be roughly grasped by forceps with a mass of muscle, as this will strangulate the area clamped and leave a fertile medium for bacterial propagation. Severed nerves and tendons should be repaired, and even major blood vessels when possible. One might add another commandment: "After débridement, do not swab or pour into a wound any strong astringent antiseptic, as it coagulates and further devitalizes fresh tissue, thereby making a clean wound virtually a classic

medium for bacterial invasion." I would not consider such a procedure appropriate in performing a tendon transplant or herniotomy. If one is not satisfied with the thoroughness of the débridement and salt solution cleansing, no damage seems to be done by irrigating the wound with an aqueous solution of merthiolate; however, vigorous swabbing should be avoided, as it stimulates bleeding, which should have been arrested.

Small wounds, which comprise most compound fractures, are usually of the "from within out" type and can be closed after conservative débridement; but rare surgical judgment and long experience are needed to know which of the severe wounds can be safely closed with a reasonable expectation of not having infection develop. However, I close loosely almost every wound if it can be done without putting the tissues under too much tension. In two instances plastic shifting of flaps has proved successful with superficial lateral slits to insure against stretching; but such ventures are seldom indicated and should be performed with grave apprehension as to their outcome.

FIFTH COMMANDMENT.—*Reduce, after débridement, every compound fracture and firmly fix the fragments in place.*

Here, I believe, lies the secret of more often obtaining union, even in spite of infection, and also of obtaining a better functional result. It has long been a recognized fact that improper alinement and apposition, and inadequate fixation of bone fragments, form a most reasonable cause for delayed or nonunion with or without infection. This fact is just as true in simple fractures as in compound fractures. It is particularly essential that an adequate reduction be obtained, since compound fractures already communicate with the outside world. Immobilization may be accomplished by means of wires or pins above and below the fracture which, when embedded in casts or splints, frequently stabilize the reduction and prevent loss of position. Often accurate impingement of the reduced fragments furnishes sufficient internal fixation. However, none of these methods give the rigid fixation essential to promote early healing of the fractured fragments of long bones. Slight movements may injure the granulations and osteogenic reconstructive processes and may thereby open new fields for bacterial invasion. Metal plates, screws, wires and nails have been used in the field of compound wounds and also, when possible, have been inserted through incisions away from the compound wound. More recently stainless steel plates have been successfully used. Certain of these metals do not corrode, nor are they affected by body fluids (Sherman,[3] Darrach [2]). When the plates used are of the same stainless metal as the screws there is no electrolytic or tissue reaction; they hold tight and do not seem to influence infection when present. When they have served their purpose they can be removed. Our experience with metal fixation of compound fractures has been limited to vitallium plates and screws, which I believe, as does Willis C. Campbell,[4] furnish a perfectly adequate means of rigid fixation; their use is warranted more often than it is employed. The reports of Venable and Stuck [5] with regard to the inertness of vitallium in the tissues have been substantiated in my modest clinical experience not only in simple fractures but in compound fractures as well. I now use it nearly always in every case of compound fracture in which rigid fixation is necessary in maintaining reduction, particularly when there is considerable comminution. However, one who attempts such measures in surgery must be master of the most meticulous surgical technic. Not only must he stock the various sizes and types of plates and screws and have the proper tools with which to handle the fragments, plates, screws, nails, wires and pins but above all things he must have profound experience and knowledge of how to use them. These procedures should be done with the minimum amount of trauma to the fragments and soft tissues and should never be attempted by the occasional operator on fractures. Unless a man is constantly doing this kind of work he has absolutely no business fooling with internal fixation.

SIXTH COMMANDMENT.—*Coat the wound with crystals of sulfanilamide and give sulfanilamide or its derivatives orally as indicated.*

The use of sulfanilamide in compound wounds was called to my attention early in 1938 by J. Albert Key [6] in referring to the then unpublished work of Jensen, Johnsrud and Nelson.[7] I have followed similar measures in every compound fracture since and feel that, although sulfanilamide may slow primary wound healing slightly, it has a markedly deterring effect on local infection. I always accompany this by the oral administration of sulfanilamide or, when this is not tolerated, deep muscular injection is used in adequately prescribed therapeutic doses. Occasionally I use it orally and hypodermically, as does Campbell,[4] in the preoperative and postoperative care of certain extensive reconstructive operative procedures in which there is a potential possibility of lighting up latent infection, with equally gratifying results. Crystals are also used as a thick dusting powder over small punctured wounds after débridement or over sutured closure of compound fractures. I realize that the fifth and sixth commandments offer exceedingly controversial ideas and recognize the fact that sufficient experimental work has probably not been done to justify such empiric use of this drug as a prophylactic measure, but my clinical experience has seemed to warrant its continued use in surgery in the manner described. Should one's judgment with regard to primary closure be wrong and infection develop in the wound, it can be recognized early by the physical and clinical symptoms and inspection of the wound through the fenestrated cast. The stitches should be removed and the wound opened wide and packed with sterile petrolatum gauze (Orr treatment [8]). After long experience with this method since its inception I am convinced that as a dressing in a deep wound which is already infected there is no irrigation used in any other treatment that compares with it. Wounds that are left open owing to extensive loss of tissue or potential infection are coated with sulfanilamide crystals and gently packed with petrolatum gauze. Dressings are changed only when a malodorous condition exists or excessive drainage

3. Sherman, W. O'Neal: The Treatment of Compound Fractures, Arch. Surg. **40**: 838 (May) 1940.

4. Campbell, W. C.: Sulfanilamide and Internal Fixation in Compound Fractures, a paper prepared for the 1940 meeting of the American Orthopedic Association, as yet unpublished; also a personal communication.

5. Venable, C. S.; Stuck, W. G.; Beach, Asa: The Effects on Bone of the Presence of Metals Based on Electrolysis, Ann. Surg. **105**: 917 (June) 1937. Stuck, W. G.: Electrolytic Destruction of Bone Caused by Metal Fixation Devices, J. Bone & Joint Surg. **19**: 1077 (Oct.) 1937.

6. Key, J. A.: The Treatment of Compound Fractures, Nebraska M. J. **24**: 367 (Oct.) 1939. Key, J. A., and Burford, T. H.: Local Implantation of Sulfanilamide in Compound Fractures, South. M. J. **33**: 449 (May) 1940. Key, J. A.: Effect of Local Implantation of Sulfanilamide in Joints and Other Tissues, read before the American Orthopedic Association, 1940.

7. Jensen, N. K; Johnsrud, L. W., and Nelson, M. C.: The Local Implantation of Sulfanilamide in Compound Fractures, Surgery **6**: 1-12 (July) 1939.

8. Orr, H. W.: Osteomyelitis and Compound Fractures, St. Louis, C. V. Mosby Company, 1929; The Treatment of Compound Fractures, Arch. Surg. **40**: 825 (May) 1940.

endangers the immobilized fractures in the cast. With this, of course, oral administration of sulfanilamide is essential.

SEVENTH COMMANDMENT.—*Immobilize compound fractures in a plaster of paris cast, adequately fenestrated for the observation of the wound and surrounding tissues.*

The more rigid the immobilization the better are the chances of avoiding infection and promoting healing not only of the bones but of the soft parts. It is my belief that, although metal splints and mechanical apparatus are extensively used in the larger clinics, where there are many assistants, assistant assistants, fellows, residents, interns and splint orderlies to look after them, they are responsible for many of the subsequent infections, delayed unions and nonunions, because of the fact that they are so often getting out of adjustment and balance, thereby constantly causing movement and irritation to the injured structures. On the other hand, for the surgeon in private practice, without the numberless attendants and assistants that a large clinic offers, a well padded, properly applied plaster cast which immobilizes the joints above and below the site of the fracture is not only the best

TABLE 1.—*Forty-Nine Patients Having Compound Fractures*

Average age	30 years
Oldest	84 years
Youngest	6 years
Ratio of males to females	3 to 1

These patients were completely studied, and in this group there were fifty-three compound fractures; i. e., four patients had two extremities with compound fractures.

TABLE 2.—*Location of Compound Fractures*

Foot	5	Patella	5
Leg	25	Thigh	2
Hand	3	Forearm	6
		Arm	7

Nine of these patients also had simple fractures of other extremities, but these simple fractures are not included in this study.

method of immobilization but allows him hours of peaceful rest and satisfaction that he could never obtain if he were harassed by the worries of how the traction and countertraction were holding in every case of compound fracture. The cast should be well padded with felt over the bony prominences, and the entire extremity with sheet-wadding bandage. It should be strong enough to allow generous fenestration over the site of the wound and fracture for constant observation and dressing. If there is any evidence whatever of swelling, the entire length should be split, not only the cast but the padding as well, and the edges spread. However, under ordinary circumstances, when the limb is properly swung up under a Balkan frame and not allowed to assume a position of dependence, one seldom sees sufficient swelling to warrant splitting. However, those without sufficient experience in applying well fitting casts had better be safe than sorry by following the rule of splitting every cast. Constant observation is the rule. Pain, swelling or impairment of circulation, one or all, are symptoms that signify trouble that must be corrected. The rules I follow for the types of casts are: For compound fractures of the hand and forearm the cast should extend from the axilla to the base of the fingers, and farther if indicated, with the elbow flexed at an angle of 90 degrees in supination or pronation, depending on the type of fracture. Fractures of the humerus are placed in an arm and body spica in an appropriate position of rotation and abduction. Compound fractures below the knee are treated in a cast which extends from the groin to the toes, with the knee appropriately flexed and the foot at a right angle with the leg. All other compound fractures of the lower extremities are treated in a single or double spica cast in appropriate abduction and flexion.

TABLE 3.—*Etiology*

	Cases
Automobile accidents	25
Gunshot wounds	2
Falls (home and at play)	8
Falls (from pole or tree)	4
Machinery and occupational	7
Athletic injuries	3
Total	49

TABLE 4.—*Treatment*

	Cases
Attempted closures made	33
Primary healing not obtained	6
Skin graft used	1
Nonunions treated by bone grafts	3

EIGHTH COMMANDMENT.—*Give in every case of compound fracture at once a prophylactic injection of antitetanus serum combined with the Bacillus welchii-perfringens serum.*

In a few compound fractures that occur it may not be necessary to take this precaution, but why should one take the chance when there is absolutely no way of being sure that tetanus or gas gangrene may not develop? One minim (0.06 cc.) or so of the serum intradermally a half hour prior to the full injection has prevented any serious serum reaction. With observance of the eighth and ninth commandments I have not (I knock on wood as I write this) had a single case of tetanus or gas gangrene in over five years.

TABLE 5.—*Results*

	Cases
Wounds not closed	20
Secondary closure	4
Healed by granulation	11
Skin grafts	5
Nonunions	3
Bone grafts for nonunions	2

TABLE 6.—*Materials Used*

	Cases
Vitallium plates	6
Plates removed	3
Vitallium screws	2
Vitallium nails	2
Nails removed	1
Taut wire, fixed traction	11

NINTH COMMANDMENT.—*Give a prophylactic dose of x-rays twice daily for three or four days over every compound fracture.*

James F. Kelly [9] has successfully treated many cases of gas gangrene with x-rays and has recommended as a prophylactic dose from 30 to 50 roentgens twice a day for three or four days. I have followed this practice in nearly every case for the past few years, and

9. Kelly, J. F.; Dowell, D. A.; Russum, B. C., and Colien, F. E.: The Practical and Experimental Aspects of the Roentgen Treatment of Bacillus Welchii (Gas Gangrene) and Other Gas-Forming Infections, Radiology **31**: 608-619 (Nov.) 1938.

as a result I know little regarding this complication except what appears in the literature.[9a]

TENTH COMMANDMENT.—*Use pectin therapy in all superficial open wounds.*

As petrolatum gauze forms the best dressing for deep wounds, so a 2 per cent aqueous solution of pectin saturated gauze forms, in my experience, the best dressing for superficial wounds. From a scientific standpoint this substance is of unproved value in the treatment of wounds. There has been no sound foundation for the assumption that pectin solution has any bactericidal properties in the wound. I do know that under certain circumstances [10] streptococcus and other pathogenic bacteria do not live in this medium. However, when used as a dressing, 2 per cent aqueous nickel pectin has a profound absorptive and hydroscopic influence which actually licks up superficial pus, secretions and débris and seems to stimulate clean, fresh granulations and peripheral scarring, offering a delightful surface for skin grafting and secondary closure. Further, it is comfortable to the patient. I have also found pectin particularly useful in preparing old burn granulations for skin grafting.

TABLE 7.—*Amputations*

Amputations	2 cases
1. Because of severe lacerations	
2. Because of circulatory insufficiency one year after fracture	
Death	1 case
Due to multiple fractures following automobile collision	

TABLE 8.—*End Results*

	Cases
Good results	35
10% or less disability for occupation	
Fair results	10
10% to 20% disability for occupation	
Bad results	4
20% disability or more for occupation	

CONCLUSION

Just as the Lord's Ten Commandments are never always obeyed, so it is with these ten commandments for the treatment of compound fractures. I have not always followed these principles completely. There are times when they will not all apply. They simply furnish a standard set of rules to follow for guidance. My idea has been that by using them I seldom overlook a single factor which might contribute to the better functional end result. I realize that I do some things that are not generally approved or well founded. However, I am convinced that they apparently do no harm but seem to contribute to fewer complications and better end results. I feel sure that if every surgeon treating fractures would set up a complete procedure covering every phase or possibility connected with the treatment of compound fractures and have his staff follow it implicitly for five years he would find that his results for that period would be far superior to any similar previous period. The statistical information with respect to a study of my last forty-nine patients who have had compound fractures is given in the tables.

1307 N Street.

9a. AUTHOR'S NOTE. My attention has been called to the danger of combining x-ray and chemotherapy in the treatment of gas gangrene. It is apparent that a choice must be made of one or the other in each case. However, we have noted no ill effect from their use as prophylactic measures where smaller doses of x-rays and sulfanilamide are used.

10. Haynes, Edith; Tompkins, C. A.; Washburn, Grace, and Winters, Matthew: Bactericidal Action of Pectin, Proc. Soc. Exper. Biol. & Med. **36**: 839 (June) 1937. Pectin as an Antiseptic, current comment, J. A. M. A. **109**: 1283, 1937. Thomson, J. E. M.: Pectin in the Treatment of Infected Wounds, Industrial Med. **7**: 441 (July) 1938.

ABSTRACT OF DISCUSSION

DR. ROBERT W. JOHNSON JR., Baltimore: Dr. Thomson has covered almost all the sins of omission and commission that the surgeon can fall into in dealing with compound fractures. I have found that students are leary of a decalogue or other Biblical reference and I have condensed my admonitions to them in an alliterative manner into five principles: splinting, shock, surgery, sulfanilamide and serum. They seem to remember that, and I was pleased in looking over the examination papers a few weeks ago to find that I did not have to fail any one on the question of how to deal with a compound fracture of the femur from the moment of onset to six months after it had occurred. I want to point up Dr. Thomson's admonition in the first commandment to avoid undue speed in the transport of the patient to the hospital. Prompt action is necessary but bumpy handling is bad. In the third commandment I particularly liked his emphasis on the use of plenty of running water as a cleansing agent and also in the use of that same agent mechanically irrigating the wound during the surgical process of débridement, and also his insistence on the avoidance of astringent antiseptics in and around the wound. I find some reason to add caution to his suggestion that fixation plates be used in all compound fractures. He does qualify it, but a great many fractures are treated in hospitals where it is difficult to get adequate assistance and where adequate supplies are not available, so I think that his caution with regard to that should be emphasized because plating a fracture without adequate assistance is no easy job and certainly prolongs shock and trauma if it is not done properly. With regard to sulfanilamide, I am for it from the ground up, but I have used it only by mouth rather than in the wound itself. We have in sulfanilamide a unique agent which acts through the blood stream as a deterrent of infection; the use of it in the wound perhaps should be further checked, despite the enthusiastic reports that have come from a number of sources. I should like to add a point which is important: Fractures, in small communities especially, should all be in the hands of a single surgeon rather than in the hands of men who deal occasionally with fractures. In that way the individual who handles fractures gets plenty of practice, and as Dr. Hammond of Easton, Md., pointed out in a paper read before this section two years ago, it accomplishes astounding results. I have been following his work for years and I want to say that that is one point wherein the medical profession by unselfish cooperation can accomplish a lot for its patients.

DR. DONALD E. MCKENNA, Brooklyn: Dr. Thomson has created a group of surgical commandments which are highly commendable. If each hospital or staff would arrive at such a formula as his institution has, it would be a great advantage in the management of compound fractures. Plenty of our large city hospitals do not see too many compound fractures. I had a hasty survey made yesterday of the Methodist Hospital fracture service. Of 1,264 fractures, there were only fifty-four compound fractures in the last two years and some odd months, or 4.2 per cent, whereas from a definite knowledge of a small suburban hospital within 100 miles of New York, I know that the incidence is over 10 per cent. Except in large industrial centers and in places among our urban population where compound fractures are liable to occur, on the waterfront, and elsewhere, even general hospitals do not see too many of these lesions. The compound fractures are emergency procedures. It is an error to temporize. The small puncture wound should be enlarged. To deny its potential wickedness is to abrogate the virtues of proper transportation, prophylactic tetanus and perfringens therapy, and efficient control of shock and proper immobilization. There is a school of thought which teaches that irrigation is to be avoided. I am in accord with the author who advocated mechanical flushing, not with a medicine dropper or bulb syringe but, to quote Dr. Thomson, "with a stream of flowing warm sterile water from an elevated jar, through a sterile tube." I would add the precaution about leaving bone fragments which are in any sense attached to viable tissue in situ. In débridement one is apt to sacrifice some of these fragments. When a compound lesion is close to a joint, I prefer skeletal traction rather than internal fixation, but when otherwise I am in accord with

Dr. Thomson as to the value of internal fixation. Vitallium, while ideal, is nonessential and in some of the smaller institutions is not available. A good screw driver and a first-rate bone drill are essentials and they are two of the rarest things that one can obtain on short notice in a small hospital. The principles promulgated should be carried to physicians through some agencies such as local fracture committees. The aim should be to overcome the indifference which characterizes the first twelve hours of treatment of compound fractures and emphasizes the hazard which creeps in as the result of delay. I should like to ask Dr. Thomson if he has had any untoward effects from postoperative roentgen therapy.

Dr. Myron O. Henry, Minneapolis: Dr. Thomson deserves congratulations for this valuable paper. I want to emphasize four of his commandments, the four s's surgery, serum, splint and sulfanilamide in compound fractures. The last war taught us the value of débridement, but since the advent of sulfanilamide I believe that débridement need not be so blindly extensive as we formerly did it. It is well to remember too, as Dr. Thomson advised, that débridement should be "conservative and intelligent, with proper respect for anatomic structures." The local implantation of sulfanilamide crystals in compound fractures originated in the Minneapolis General Hospital by house officers Jensen, Johnsrud and Nelson in 1937. Their work was reported in *Surgery* in July 1939. I had the opportunity of following some of this work in its early stages. These men found that the incidence of severe infections in compound fractures was about 25 per cent in the Minneapolis General Hospital cases. Böhler is the only man who has reported a lower incidence and he stated that in Vienna the incidence of "severe" infections was only 8 per cent. They must have fewer staphylococci in Vienna. By local implantation of sulfanilamide crystals this incidence in the Minneapolis series has been lowered to less than 5 per cent. The amount of sulfanilamide used depends on the extent of the trauma and the extent of the contamination; 20 Gm. is the average limit for adults and from 5 to 15 Gm. is sufficient for average to severe wounds. The drug apparently does act locally and it seems to be more efficient by local implantation than by oral administration in these cases. It may delay wound healing slightly but its absorption from the tissues is slow, and this gives a prolonged sulfanilamide effect. As much as 40 Gm. can be given in severe cases. I think it is wise to remember, though, that sulfanilamide is not bactericidal for staphylococci but only bacteriostatic.

Dr. Harold R. Bohlman, Baltimore: I wish to emphasize three points: First, avoid tension in all compound fractures and traumatic wounds. If capillary circulation is obliterated, serum and white blood cells are impotent. Clostridia, injured tissues and impaired circulation are sure to cause gas gangrene. I have sections of such tissues in which Clostridia have grown so rapidly that no cellular reaction whatever is present. Second, instead of closing so many wounds, one should leave them open more frequently and often enough, particularly in gunshot wounds, counter incisions should be made, relieving tension in all fascial compartments. These wounds should be thoroughly washed and freed of foreign material. In July 1937 I published the first article on treatment of gas gangrene with sulfanilamide. The prophecies in this article have been well borne out by subsequent experience. I administered sulfanilamide by mouth and introduced crystals directly into wounds but thought that oral administration produced the results so discontinued local use, resuming it again after Jensen and co-workers published their report. It delays healing and is toxic for some individuals. It is tremendously bacteriostatic for all ordinary organisms in the high local concentrations thus attained. It greatly reduces the incidence of wound infections but may produce more scar tissue. A word of caution regarding sulfanilamide: Adequate dosage and control are necessary. There is no way of prophesying how it will affect an individual. A daily red blood cell and white blood cell count and blood concentration level determination are necessary. Débridement is entirely unnecessary in many wounds when proper sulfanilamide therapy is employed. I mention the following not as suggested treatment but to emphasize this point: In six cases I have used no sterilizing compounds on or in the wounds, simply covering them with petrolatum gauze and rapidly raising the blood level of sulfanilamide 10 mg. per hundred cubic centimeters. Some were extensively macerated wounds of the tibia and ankle, but healing occurred with scarcely any scar resulting; no infections occurred. I have seen some severe reactions when roentgen therapy was combined with sulfanilamide. Bear in mind that some people do not tolerate sun on their skins while taking this drug. X-rays seem to have some similar effect. I can see no reasons for subjecting a badly injured patient to the ordeal of extensive moving for roentgen therapy.

Dr. James E. M. Thomson, Lincoln, Neb.: With regard to roentgen therapy, it is true that a few reactions occurred, but nothing of a serious nature locally. Unlike the method that Dr. Bohlman suggests, I use the mobile unit and send it up to the room and have the patient treated there. It isn't a heavy dose of x-rays: it is only 30 or 40 roentgens, and it is a very simple matter to do that with a portable unit. Another thing about sulfanilamide and its use: In cases that are going to surgery, in which there has previously been an infective process, and although apparently clean, there is the potential possibility of lighting up an old infection. I have felt that the prophylactic use of sulfanilamide had a direct influence in preventing the awakening of infection. There were in this group forty-nine cases with fifty-three fractures, and unfortunately I couldn't show the statistical slides. Thirty-five had good results, and I mean by that that there was less than 10 per cent partial or permanent disability in the leg or arm for the profession or work that they were in. Twelve had fair results. There was no gas gangrene. There were two amputations. One was an amputation because of extensive laceration, and the second was one in which a mistake in judgment on my part led to an amputation due to circulatory insufficiency a year and a half after the fracture.

TREATMENT OF ADDISON'S DISEASE WITH DESOXYCORTICOSTERONE ACETATE

BY INTRAMUSCULAR INJECTIONS AND SUBCUTANEOUS IMPLANTATION OF PELLETS

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Within the past twelve years there has occurred a tremendous increase both in the understanding of the pathologic physiology and in the treatment of Addison's disease. The study of this particular problem received its impetus essentially as a result of two major contributions, the preparation of a fairly potent adrenal cortex extract [1] and the recognition of the underlying blood electrolyte disturbances which occurred in the presence of destruction of the adrenal cortex.[2]

From the Medical Services of Drs. George Baehr and B. S. Oppenheimer, Mount Sinai Hospital.

The implantation of pellets was performed by Dr. John H. Garlock, attending surgeon, Mount Sinai Hospital.

The desoxycorticosterone acetate for intramuscular injections was given to us by Ciba Pharmaceutical Products, Inc., Summit, N. J.

The pellets of desoxycorticosterone acetate were supplied to us by Dr. George W. Thorn of the Johns Hopkins Hospital, Baltimore.

1. Hartman, F. A.; MacArthur, C. G.; and Hartman, W. E.: A Substance Which Prolongs the Life of Adrenalectomized Cats, Proc. Soc. Exper. Biol. & Med. **25**: 69 (Oct.) 1927. Rogoff, J. M., and Stewart, G. N.: The Influence of Adrenal Extracts on the Survival Period of Adrenalectomized Animals, Science **66**: 327 (Oct.) 1927. Pfiffner, J. J., and Swingle, W. W.: The Preparation of an Active Extract of the Suprarenal Cortex, Anat. Rec. **44**: 225 (Dec.) 1929.

2. Loeb, R. F.: Chemical Changes in the Blood in Addison's Disease, Science **76**: 420 (Nov. 4) 1932. Loeb, R. F.; Atchley, D. W.; Benedict, Ethel M., and Leland, Jessica: Electrolyte Balance Studies in Adrenalectomized Dogs, with Particular Reference to the Excretion of Sodium, J. Exper. Med. **57**: 775 (May) 1933. Harrop, G. A.; Weinstein, Albert; Soffer, L. J., and Trescher, J. H.: The Diagnosis and Treatment of Addison's Disease, J. A. M. A. **100**: 1850 (June 10) 1933. Harrop, G. A.; Soffer, L. J.; Ellsworth, Read, and Trescher, J. H.: Plasma Electrolytes and Electrolyte Excretion During Suprarenal Insufficiency in the Dog, J. Exper. Med. **58**: 17 (July) 1933.

The results of these investigations showed that destruction of the adrenal cortex was followed by a marked excretion of sodium and chloride in the urine, a pronounced drop in the blood concentration of these ions, an increase in the blood potassium, and hemoconcentration and nitrogen retention. Treatment was directed toward reestablishment of a normal blood electrolyte pattern. This was accomplished both with the aid of injections of cortical extract and with the addition of large quantities of salt (from 10 to 20 Gm.) to the diet. Wilder and his co-workers [3] pointed out the importance and need for the restriction of the potassium intake in the diet.

Although this represented an improvement in the treatment of Addison's disease, it still left much to be desired. The adrenal cortex extract was available in limited quantities and was of limited potency. The large quantities of salt which patients had to consume were irksome to them, and the improvement in the general condition of these patients was not unduly striking. It was evident that further advancement in the treatment of this disease was dependent on the preparation of a more potent extract which could preferably be prepared synthetically.

In 1936 and 1937 Mason, Myers and Kendall [4] and de Fremery and his co-workers [5] isolated corticosterone and dehydrocorticosterone in crystalline form from the extracts of the adrenal cortex and found that they could maintain adrenalectomized animals in good condition. A short while later, Steiger and Reichstein [6] announced the preparation of desoxycorticosterone acetate from stigmasterol, and subsequently Reichstein and von Euw [7] succeeded in recovering this compound from an extract of the adrenal cortex. Levy-Simpson [8] used desoxycorticosterone acetate in the treatment of two patients with Addison's disease and found that it exercised an effect qualitatively similar to that of adrenal cortex extract.

In 1938 Thorn and his co-workers [9] used desoxycorticosterone acetate in the treatment of bilaterally adrenalectomized dogs. They found that it was effective in maintaining these animals in good condition despite a diet low in sodium and chloride. Withdrawal of the drug resulted in a prompt diuresis with loss of sodium and chloride ions in the urine, a decrease in urinary potassium, hemoconcentration and elevation of blood nonprotein nitrogen, and the development of symptoms of adrenal insufficiency. Thorn, Howard and Emerson [10] subsequently used this compound in the treatment of eight patients with Addison's disease. They found that treatment in doses of from 2 to 30 mg. daily resulted in a marked improvement in the clinical condition of the patient, as well as the restoration of the blood electrolyte pattern to normal. These changes occurred without supplementary treatment with sodium salts or a decrease in the potassium content of the diet. The authors felt that results of treatment with desoxycorticosterone acetate resembled in every way the effect obtained with a potent cortical extract. Ferrebee, Ragan, Atchley and Loeb [11] treated thirteen patients with Addison's disease with intramuscular desoxycorticosterone acetate and propionate. They found that improvement was greater than from any previous therapy. Their results were in general agreement with those reported by Thorn and his group.[10] In three of their patients, however, definite hypertension developed during the course of treatment, and ten of their patients had edema, which varied from mild puffiness of the face and ankles to massive anasarca. Of this group of ten, cardiac insufficiency developed in three.

In 1937 Deanesly and Parkes [12] reported that the subcutaneous implantation of pellets of estrogens and androgens produced a prolongation of the hormonal effect. Ingle and Mason [13] succeeded in prolonging the survival period of adrenalectomized rats by implanting subcutaneously tablets composed of a mixture of cholesterol and compounds derived from the adrenal cortex. Thorn and his co-workers,[14] utilizing the technic employed by Deanesly and Parkes, studied the effect of subcutaneously implanted pellets of desoxycorticosterone acetate in bilaterally adrenalectomized dogs and six patients with Addison's disease. They find that results obtained with the pellets are similar to those with intramuscular injections except that the former effect a greater economy in the use of the drug. They conclude that the life of a pellet depends on its consistency and weight. The quantity of desoxycorticosterone acetate liberated appears to vary with the surface area of the pellet. The pellets are absorbed at the rate of 0.25 to 0.40 mg. daily.

RESULTS

In the present paper we present the results obtained in five patients with Addison's disease, who were treated with intramuscular injections of desoxycorticosterone acetate in oil. Four of these patients subsequently received pellets of the synthetic crystalline compound implanted subcutaneously. One of the patients was a female and four were males. Their ages varied between 11 and 44 years. All the patients had been previously treated with large amounts of salt by mouth, and four of them at some time or other received injections of adrenal cortex extract:

CASE 1.—D. G., a woman aged 21, was admitted to the hospital March 21, 1938, because of marked asthenia, pigmentation, nausea and loss of 20 pounds (9 Kg.) in weight. The blood pressure could not be determined by auscultation, but by palpation the systolic pressure was found to be 70. The blood urea nitrogen was 17 mg. per hundred cubic centimeters,

3. Wilder, R. M.; Snell, A. M.; Kepler, E. J.; Rynearson, E. H.; Adams, Mildred, and Kendall, E. C.: Control of Addison's Disease with a Diet Restricted in Potassium: A Clinical Study, Proc. Staff Meet., Mayo Clin. **11:** 273 (April 29) 1936.

4. Mason, H. L.; Myers, C. S., and Kendall, E. C.: Chemical Studies of the Suprarenal Cortex, J. Biol. Chem. **116:** 267 (Nov.) 1936.

5. de Fremery, P.; Laqueur, E.; Reichstein, T.; Spanhoff, R. W., and Uyldert, I. E.: Corticosterone, a Crystallized Compound with the Biological Activity of the Adrenal-Cortical Hormone, Nature, London **139:** 26 (Jan. 2) 1937.

6. Steiger, Marguerite and Reichstein, T.: Desoxy-Corticosterone (21-Oxy-Progesteron aus Δ^5-3-Oxy-ätio Cholensäure), Helvet. Chim. acta **20:** 1164, 1937.

7. Reichstein, T., and von Euw, J.: Ueber Bestandteile der Nebennierenrinde: Isolierung der Substanzen Q (Desoxy-Corticosteron) und R sowie wieterer Stoffe, Helvet. chim. acta **21:** 1197, 1938.

8. Levy-Simpson, Samuel: The Use of Synthetic Desoxycorticosterone Acetate in Addison's Disease, Lancet **2:** 557 (Sept. 3) 1938.

9. Thorn, G. W.; Engel, L. L., and Eisenberg, Harry: The Effect of Corticosterone and Related Compounds on the Renal Excretion of Electrolytes, J. Exper. Med. **68:** 161 (Aug.) 1938; Studies on Desoxycorticosterone, a Synthetic Adrenal Cortical Hormone, Endocrinology **25:** 39 (July) 1939.

10. Thorn, G. W.; Howard, R. P., and Emerson, Kendall, Jr.: Treatment of Addison's Disease with Desoxycorticosterone Acetate, a Synthetic Adrenal Cortical Hormone, J. Clin. Investigation **18:** 449 (July) 1939.

11. Ferrebee, J. W.; Ragan, Charles; Atchley, D. W., and Loeb, R. F.: Desoxycorticosterone Esters: Certain Effects in the Treatment of Addison's Disease, J. A. M. A. **113:** 1725 (Nov. 4) 1939.

12. Deanesly, R., and Parkes, A. S.: Factors Influencing the Effectiveness of Administered Hormones, Proc. Roy. Soc., London, s. B **124:** 279 (Dec. 7) 1937; Further Experiments on the Administration of Hormones by the Subcutaneous Implantation of Tablets, Lancet **2:** 606 (Sept. 10) 1938.

13. Ingle, D. J., and Mason, A. L.: Subcutaneous Administration of Cortin Compounds in Solid Form to the Rat, Proc. Soc. Exper. Biol. & Med. **39:** 154 (Oct.) 1938.

14. Thorn, G. W.; Engel, L. L., and Eisenberg, H.: Treatment of Adrenal Insufficiency by Means of Subcutaneous Implants of Pellets of Desoxycorticosterone Acetate (a Synthetic Adrenal Cortical Hormone), Bull. Johns Hopkins Hosp. **64:** 155 (March) 1939. Thorn, G. W.; Howard, R. P.; Emerson, Kendall, Jr., and Firor, W. M.: Treatment of Addison's Disease with Pellets of Crystalline Adrenal Cortical Hormone Implanted Subcutaneously, ibid. **64:** 339 (May) 1939.

blood chlorides 93 milliequivalents per liter, sodium 131.3 milliequivalents per liter and sugar 79 mg. per hundred cubic centimeters. She was treated with a constant intravenous drip of isotonic saline solution and during the ensuing twenty-four hours received approximately 3,000 cc. As a result of the intravenous therapy she improved sufficiently to continue oral treatment with salt. During the course of the next week she was given 9 Gm. of sodium chloride and 4 Gm. of sodium bicarbonate daily by mouth. Her blood pressure rose to 95 systolic, 60 diastolic; the weight was 113 pounds (51 Kg.). The blood chemistry values had now altered, so that the sodium was 138.3, chlorides 100.0 and potassium 6.3 milliequivalents per liter. The blood sugar rose to 100 mg. per hundred cubic centimeters; the urea nitrogen, however, remained stationary at 16 mg. From June 16 to 19, approximately three months after oral treatment with salt had been started, the patient without our knowledge omitted her daily supplementary

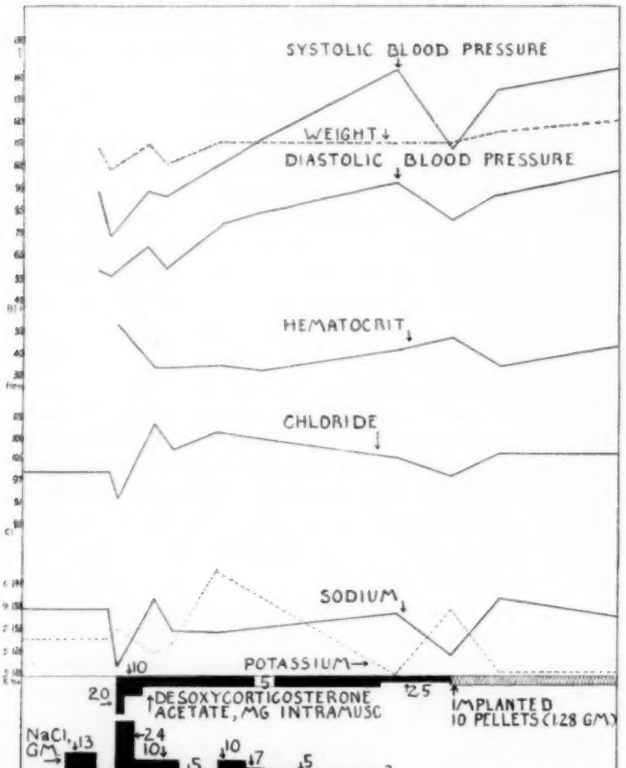

Chart 1.—Course in case 1.

salt feedings and was promptly precipitated into addisonian crisis. The blood pressure fell to 75 systolic, 58 diastolic. The blood values were sodium 122.3, chlorides 93.5 and potassium 7.2 milliequivalents per liter. The urea nitrogen was 34 and sugar 90 mg. per hundred cubic centimeters. The carbon dioxide content was 22.6 millimols per liter. The volume of packed red cells was 54 per cent, and the body weight had fallen to 104 pounds (47 Kg.).

During the three months period in which the patient was treated with salt alone, we find that the blood electrolytes were maintained at a fairly normal level. However, at no time did she feel well. She continued to complain of profound asthenia and anorexia and could spend but little time out of bed. June 19, when the symptoms of crisis developed, intramuscular injections of desoxycorticosterone acetate were started. She received 20 mg. of the synthetic substance daily for two days, then 10 mg. daily for four days. In addition, during this six day period she received 16 Gm. of salt by mouth daily. At the end of this period her weight had risen to 116 pounds (53 Kg.), the blood pressure was 90 systolic, 65 diastolic and the hematocrit reading had fallen to 35 per cent. The blood values now were sodium 139.9, chlorides 113.5 and potassium 5.1 milliequivalents per liter; the urea nitrogen was 12 mg. per hundred cubic centimeters and the carbon dioxide content was 23.0 millimols per liter. From June 24 until July 15 the patient received 10 Gm. of supplementary salt by mouth and 5 mg. of desoxycorticosterone acetate intramuscularly daily, but from July until the end of the first week in September the daily supplementary salt intake was reduced to 5 Gm. At the end of this period the patient's clinical condition improved remarkably. She was up and out of bed, she had a sense of well-being, her appetite had improved, and the pigmentation had decreased somewhat. The blood pressure was now 150 systolic, 94 diastolic; the weight was 117 pounds (53 Kg.). The blood electrolyte studies showed the sodium to be 137.8 milliequivalents, chlorides 107.0 milliequivalents and potassium 3.6 milliequivalents per liter, urea nitrogen 10 mg. and sugar 90 mg. per hundred cubic centimeters, carbon dioxide 24.8 millimols per liter, and the blood hematocrit value 43 per cent. Because of the hypertension, the supplementary salt feedings were entirely discontinued, and the desoxycorticosterone acetate was reduced to 2.5 mg., given intramuscularly daily. After one week of this regimen the blood pressure fell to 112 systolic, 78 diastolic; the blood sodium was 127, chlorides 102 and potassium 9.2 milliequivalents per liter. It was obvious that 2.5 mg. of the drug given intramuscularly daily without additional salt was inadequate to maintain a normal electrolyte pattern. Despite the abnormalities of the blood constituents, however, her sense of well-being continued, and the patient was up and about without any discomfort.

September 16 ten pellets of crystalline desoxycorticosterone acetate were implanted subcutaneously, the average weight of each pellet being 128 mg. It was calculated that approximately 0.3 mg. of the compound would be absorbed daily per pellet, the total daily amount being 3 mg. This is equivalent in therapeutic effect to about 5 mg. given intramuscularly. She received no supplementary salt by mouth. One week after the implantation of the pellets her weight was 120 pounds (54 Kg.), the blood pressure was 138 systolic, 92 diastolic, and the hematocrit level had fallen to 34 per cent. The blood values now were sodium 141.8, chlorides 107.5 and potassium 3.6 milliequivalents per liter. She felt perfectly well and was discharged from the hospital. November 10, two months after implantation of the pellets, the blood pressure had risen to 150 systolic, 95 diastolic, and on slight exertion it would rise to 180 systolic, 110 diastolic, which was associated with dyspnea and cardiac palpitation. Her weight was 122 pounds (55 Kg.), and the blood electrolytes were entirely normal.

During the period of treatment with desoxycorticosterone acetate there occurred a tremendous improvement as far as the symptoms related to the Addison's disease were concerned, despite the fact that no additional salt was required. However, the symptoms of mild cardiac failure were a cause for considerable concern; they were probably due to the liberation of excessive amounts of the desoxycorticosterone acetate. She is to be readmitted to the hospital for the removal of some of the implanted pellets.

CASE 2.—S. R., a man aged 19, was admitted to the hospital Nov. 25, 1938, with all the characteristic signs and symptoms of Addison's disease. On admission, the hemoglobin was 101 per cent and the red blood cell count was 7,500,000, showing considerable hemoconcentration. The blood sodium was 128.3, chlorides 85 and potassium 8.1 milliequivalents per liter. The blood urea nitrogen was 27 mg. and the sugar 100 mg. per hundred cubic centimeters. His weight was 113 pounds (51 Kg.) and blood pressure 90 systolic, 50 diastolic. The patient was given 12 Gm. of sodium chloride and 4 Gm. of sodium bicarbonate daily by mouth. In addition, during the first two weeks he received 2 cc. of adrenal cortex extract subcutaneously daily. After seven weeks of treatment with salt alone he was discharged from the hospital considerably improved, although he continued to complain of weakness and some anorexia. His blood pressure on discharge had risen to 112 systolic, 70 diastolic, and the blood sodium had increased to 135 milliequivalents per liter.

He was readmitted to the hospital May 19, 1939. During the intervening six months period he had been taking daily 12 Gm. of salt and 4 Gm. of sodium bicarbonate. His weight had increased to 133 pounds (60 Kg.), and the blood pressure was 110 systolic, 80 diastolic. The blood chemical values now were sodium 133.1, chlorides 100 and potassium 9.6 milliequivalents per liter, urea nitrogen 15 and sugar 90 mg. per hundred cubic centimeters, and carbon dioxide content 25.5 millimols per liter. During this period of supplementary salt treatment he continued to feel weak, had one or two daily episodes of nausea and was entirely incapable of doing any work.

One week after his readmission to the hospital, treatment was begun with desoxycorticosterone acetate. He received a daily intramuscular injection of 5 mg. of the drug in oil, and the supplementary sodium chloride intake was reduced to 10 Gm. After one week of this treatment, the blood electrolytes returned to normal levels, the sodium increasing to 137.8 and chlorides to 105 milliequivalents per liter. His weight increased to 138 pounds (63 Kg.), but the blood pressure stayed relatively stationary at 105 systolic, 65 diastolic. Despite the improvement in blood chemistry values there occurred no change in symptoms. He continued to complain of weakness and occasional episodes of nausea. Three weeks after the intramuscular injections were started, ten pellets of crystalline desoxycorticosterone acetate were implanted subcutaneously in the right infrascapular region. The average weight of each pellet was 103 mg. For two days after the implantation of the pellets he continued to receive the supplementary 10 Gm. of salt by mouth. At the end of this period he began to complain of headache, vomiting, edema of the face and hands, palpitation and exertional dyspnea. It was noted that a gallop rhythm had developed. His weight at this time was 138 pounds and the blood pressure had risen to between 130 systolic, 85 diastolic, and 136 systolic, 102 diastolic. The blood electrolytes, however, showed no material change from the previous levels. The sodium was 137.7, chlorides 108.5, and potassium 7.1 milliequivalents per liter. The urea nitrogen was 10 and the sugar 80 mg. per hundred cubic centimeters, while the carbon dioxide content was 23.9 millimols per liter. The daily salt intake was promptly reduced and the headache, vomiting, and edema disappeared. On discharge from the hospital July 18, 1939, one month after implantation of the pellets, he was taking only 2 Gm. of additional salt by mouth, his weight was 139 pounds (63 Kg.) and the blood pressure 124 systolic, 80 diastolic. The blood electrolytes were entirely normal. Symptomatically there occurred a marked improvement. He felt quite strong and was anxious to return to work. Anorexia and nausea had entirely disappeared. He has been followed regularly with repeated blood chemistry determinations. In October 1939 the additional salt by mouth was entirely discontinued. In December 1939, six months after implantation of the pellets, the patient continues to feel extraordinarily well. His blood pressure, however, has risen to 140 systolic, 90 diastolic. The blood electrolyte pattern continues to remain normal.

This patient, like the one previously described, could get along only poorly when treated with large amounts of salt alone. Even after administration of a potent adrenal cortex extract there was but little change in the clinical condition, although the blood chemical constituents were approximately normal. Following the administration of the desoxycorticosterone acetate, however, there occurred marked improvement in symptoms, the most striking of which was the tremendous increase in the sense of well-being. There were improvement in strength and appetite and a complete disappearance of the gastrointestinal symptoms. However, on implantation of pellets there developed hypertension and edema and some signs of heart failure, although relatively mild in degree.

CASE 3.—J. S., a man aged 44, was admitted to the hospital May 24, 1939, because of pigmentation, progressive asthenia and fatigue, anorexia, nausea, and loss of 16 pounds (7 Kg.) in weight in two weeks. His blood pressure on admission was 100 systolic, 75 diastolic and he weighed 118 pounds (53.5 Kg.). He presented a characteristic picture of Addison's disease in mild crisis. The blood chemical values were sodium 127.6 and chlorides 94.0 milliequivalents per liter, urea nitrogen 19 mg. and sugar 105 mg. per hundred cubic centimeters. Treatment was begun with 15 Gm. of salt by mouth daily in addition to the salt content of the usual ward diet. At the end of one month of this regimen, his weight was still 118 pounds and the blood pressure 105 systolic, 65 diastolic. The blood sodium rose only slightly to 130.5 and chlorides to 97 milliequivalents per liter while the potassium was 7.4 milliequivalents. The blood urea nitrogen was 14 mg., and the volume of packed red blood cells was 41.5 per cent. There was no improvement in the clinical condition. He continued to complain of profound weakness, anorexia and nausea. June 29, in addition to treatment with 15 Gm. of salt, intramuscular injection of 5 mg. of desoxycorticosterone acetate daily were started. After eleven days of the combined therapy his weight increased to 125 pounds (57 Kg.), the blood pressure rose to 125 systolic, 80 diastolic,

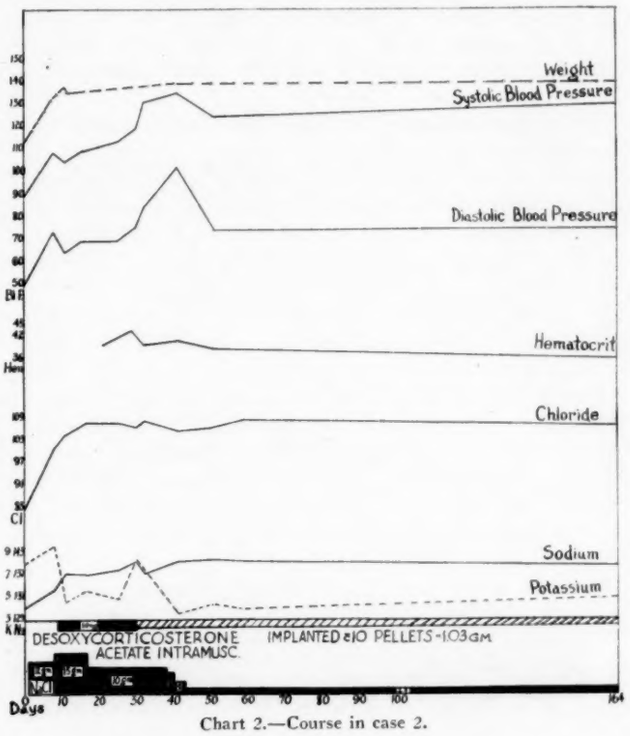

Chart 2.—Course in case 2.

and the hematocrit value dropped to 28 per cent. The blood electrolytes now were perfectly normal. The blood sodium was 138.3, chlorides 105.5 and potassium 4.5 milliequivalents per liter, while the urea nitrogen was 13 and the sugar 90 mg. per hundred cubic centimeters. The carbon dioxide content of the blood was 29 millimols per liter. Although there occurred this marked improvement in the laboratory observations, clinical improvement was not so striking. The anorexia and nausea had subsided considerably but the patient continued to complain of weakness. The supplementary sodium chloride intake was reduced to 10 Gm. daily, and seventeen days later thirteen pellets of the crystalline desoxycorticosterone acetate were implanted subcutaneously in the left infrascapular region. The average weight of each pellet was 126 mg. It was calculated that the daily absorption of the drug from the pellets would total 3.9 mg. Six weeks after implantation of the pellets the symptoms of Addison's disease had improved considerably. Anorexia and nausea had vanished, and the patient felt considerably stronger. However, he now began to complain of precordial pain on exertion, dyspnea and cardiac palpitation. The precordial pain was somewhat relieved by glyceryl trinitrate. The blood pressure at this time was 140 systolic, 85 diastolic, the hematocrit value was 33.5 per cent and blood

sodium 139, chlorides 105 and potassium 5.9 milliequivalents per liter. The supplementary salt by mouth was entirely discontinued but the precordial discomfort continued and the patient was now seriously handicapped by his cardiac symptoms. Two months after implantation of the pellets the blood electrolytes continued to be normal but the blood pressure varied from 150 systolic, 80 diastolic to 184 systolic, 98 diastolic. It was decided to remove some of the implanted pellets, and September 26 four pellets were removed surgically.

The blood pressure promptly fell to 140 systolic, 85 diastolic and the attacks of palpitation and precordial pain were somewhat less frequent. At present, one month after removal of the four pellets, the blood pressure continues at 145 systolic, 88 diastolic, his weight is 121 pounds (55 Kg.) and the blood sodium is 137.5, chlorides 102.5 and potassium 3.6 milliequivalents per liter. The blood urea nitrogen is 7.0 and the sugar is 80 mg. per hundred cubic centimeters. The patient has had no additional salt during this period. However, the anginal symptoms persist, although with somewhat lessened intensity.

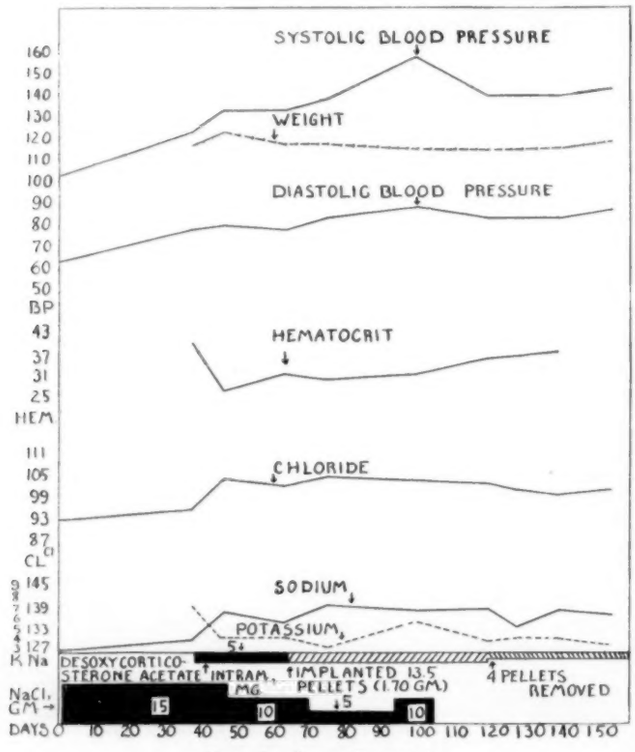

Chart 3.—Course in case 3.

We feel that it will be necessary to remove more pellets, despite the fact that the amount of the drug being absorbed is only approximately 2.7 mg. daily.

This patient represents the third of this series, all of whom have behaved in essentially the same fashion. After treatment with desoxycorticosterone acetate they progressed remarkably well from the point of view of Addison's disease. This subjective and objective improvement continued without the necessity for taking additional salt by mouth. However, in all three patients hypertension has developed, and in two of them it was severe enough to warrant removal of some of the implanted pellets.

CASE 4.—L. C., a man aged 34, was admitted to the hospital Nov. 20, 1939, after being treated elsewhere for Addison's disease. For a month prior to admission to the hospital he had received 16 Gm. of salt by mouth daily, plus injections of 5 cc. of adrenal cortex extract twice a week. On admission to the hospital his weight was 129 pounds (58.5 Kg.), blood pressure 94 systolic, 66 diastolic and hematocrit value 47 per cent. The blood sodium was 127 and chlorides 100 milliequivalents per liter. The blood urea nitrogen was 21 and sugar 95 mg. per hundred cubic centimeters. The carbon dioxide content was 26.5 millimols per liter. From November 20 until November 30 he was treated with 15 Gm. of salt by mouth without any additional extract. At the end of this period of time, he had lost 2 pounds (0.9 Kg.) in weight but there was no change in the blood electrolytes, blood pressure or hematocrit reading. He continued to complain of nausea and profound asthenia, and the intensity of pigmentation increased. November 30, daily intramuscular injections of 5 mg. of desoxycorticosterone were started in addition to the 15 Gm. of salt. There occurred an immediate improvement in clinical symptoms and by December 11 he felt well enough to get out of bed; nausea and anorexia had entirely disappeared and he felt considerably stronger. His weight at this time had increased to 132½ pounds (60 Kg.), blood pressure was 102 systolic, 68 diastolic and the hematocrit level had fallen to 39 per cent. The blood electrolyte pattern returned to normal, the blood sodium being 140.6 and chlorides 107 milliequivalents per liter; blood urea nitrogen was 6 mg. and sugar 60 mg. per hundred cubic centimeters, while the carbon dioxide content was 28.1 millimols per liter. December 19 the injected dose of desoxycorticosterone acetate was reduced to 2.5 mg. daily while the supplementary salt feeding had been decreased to 5.0 Gm. daily. Eight days later with this regimen his weight had increased to 136½ pounds (62 Kg.); the blood pressure and hematocrit level remained constant at 106 systolic, 64 diastolic and 38 per cent respectively. The blood sodium was 143.9 and chlorides 109 milliequivalents per liter, urea nitrogen 12 mg. and sugar 75 mg. per hundred cubic centimeters, and the carbon dioxide content was 25.8 millimols per liter. The desoxycorticosterone acetate was now reduced to 1.5 mg. with 5 Gm. of salt daily. Six days later there was no change in the weight or blood pressure, and the blood chemical constituents remained perfectly normal. Clinically the patient felt very well. Jan. 6, 1940, three pellets of crystalline desoxycorticosterone acetate were implanted subcutaneously in the left infrascapular region. The average weight of each pellet was 110 mg. and it was calculated that he would absorb approximately 0.9 mg. of the drug daily. In addition he receives 5 Gm. of salt by mouth. At present, two weeks after the implantation of the pellets, he continues to feel perfectly well and is anxious to go back to work. There has been no further change in his blood pressure, and the blood electrolytes remain normal.

In this case we attempted to avoid the development of the complications in other cases following the use of the synthetic compound. In previous cases the therapeutic goal desired was the ultimate treatment with desoxycorticosterone acetate without the supplementary daily salt feedings. This required the use of rather large amounts of desoxycorticosterone, and consequently there developed hypertension, edema or both. In this last case the amount of the substance decided on was less than the amount that would be required if no additional salt was to be used. To date this patient has had none of the sequelae seen in our patients treated with the large doses of desoxycorticosterone acetate. With the aid of a small amount of salt (5 Gm.) daily in addition to his regular diet he is doing extremely well.

CASE 5.—This case will be reported in greater detail elsewhere by the department of pediatrics of the hospital. Briefly, S. S., a boy aged 11, was admitted to the hospital April 15, 1938, in severe addisonian crisis, with a well defined history of Addison's disease of at least six months' duration. On admission his weight was 72 pounds (33 Kg.), blood pressure 64 systolic, 42 diastolic, blood urea nitrogen 51 mg. per hundred cubic centimeters, and blood sodium 114.7 and chlorides 85 milliequivalents per liter. He was given large quantities of intravenous saline solution and dextrose, and April 25 the blood pressure was still 66 systolic, 42 diastolic, blood urea nitrogen 26 mg. and sugar 100 mg. The blood electrolytes were sodium 120.5, chlorides 85 and potassium 6.9 milliequivalents per liter.

Clinically he was somewhat improved, although he continued to be listless and rather drowsy.

He was started on 10 Gm. of salt and 5 Gm. of sodium bicarbonate daily by mouth. Under this regimen he became more alert and seemed somewhat stronger. June 10, six weeks after oral salt therapy was begun, he was still seriously ill.

TABLE 1.—*Dextrose Tolerance Curves* in Patients with Addison's Disease Before and After Treatment with Desoxycorticosterone Acetate Blood Sugar, Mg./100 Cc.*

Patient and Type of Therapy	Control	½ Hour	1 Hour	2 Hours	3 Hours
1. D. K.					
Treatment with salt alone	55	85	125	110	95
Treatment with desoxycorticosterone acetate, 5 mg. intramuscularly for 68 days	75	125	105	90	85
2 months after pellets were implanted	70	135	115	120	120
2. S. R.					
Treatment with salt alone	85	90	85	85	70
Treatment with desoxycorticosterone acetate for 4 months (injections and pellets)	60	85	75	60	40
4. L. C.					
Treatment with salt alone	50	130	80	85	90
Treatment with desoxycorticosterone acetate for 3 weeks (injections)	90	105	100	85	80
5. S. S.					
Treatment with salt alone	60	115	80	90	90
Treatment with desoxycorticosterone acetate for 2 months (injections)	80	105	80	95	75

* 1.75 Gm. of dextrose per kilogram of body weight was administered to the fasting patient.

The blood urea nitrogen was 26 mg. and sugar 50 mg. per hundred cubic centimeters, while the blood sodium was 125.2 and chlorides 105 milliequivalents per liter, although the blood pressure had gone up to 96 systolic, 56 diastolic. At this point he began to receive 2 cc. of adrenal cortex extract subcutaneously in addition to the salt. Four months later (October 6) his weight had increased to 79 pounds (36 Kg.), the blood pressure was 100 systolic, 60 diastolic and the blood electrolytes were entirely normal. He was discharged from the hospital and during the course of the next year he received 15 Gm. of salt by mouth and 2 cc. of adrenal cortex extract subcutaneously twice a week. One year after discharge from the hospital, Oct. 4, 1939, he had gained 18 pounds (8 Kg.) in weight and felt fairly well; his blood pressure was 100 systolic, 70 diastolic, blood urea nitrogen 19 mg. and sugar 90 mg. per hundred cubic centimeters. The blood sodium was 139, chlorides 106.5 and potassium 3.6 milliequivalents per liter. The hematocrit value was 40 per cent. He was taken off salt and extract for about forty-eight hours; at the end of this period he began to complain of weakness, nausea and abdominal cramps. There was no change in blood pressure, but the hematocrit value increased to 43 per cent. The blood urea nitrogen had risen to 24 mg. The blood sodium had fallen to 135 and the chlorides to 101.5 milliequivalents per liter, while the potassium increased to 5.4 milliequivalents. October 10 treatment was begun with desoxycorticosterone acetate; during the course of the next month the daily dose was reduced to 1.5 mg., while he received 5 Gm. of additional salt by mouth. The patient felt well, the blood pressure was 104 systolic, 70 diastolic and the weight 99 pounds (45 Kg.), and the blood electrolytes were entirely normal. At this point it was decided to discontinue the desoxycorticosterone acetate entirely but to increase the daily supplementary salt intake again to 15 Gm. Two weeks later, although the blood chemistry values were still perfectly normal, he began to complain of some weakness and his appetite was reduced. His sense of well-being was not as marked as during the period of treatment with the desoxycorticosterone acetate.

COMMENT

The treatment of Addison's disease with desoxycorticosterone acetate represents a marked advance in therapy. It produces not only dramatic changes in the blood chemistry but equally striking changes in the well-being of the patient. The effect of the synthetic compound on the blood electrolytes is qualitatively the same as that with adrenal cortex extract except that the effect of the synthetic substance is more pronounced. With adequate doses of the desoxycorticosterone acetate there occur a retention of blood sodium and chloride and a potassium diuresis. With the reestablishment of a normal blood electrolyte pattern, evidences of dehydration and hemoconcentration disappear and the urea nitrogen returns to normal. In contrast to the effect of the synthetic drug on the blood electrolytes, no effect is produced on carbohydrate metabolism. In four cases (table 1) dextrose tolerance tests were done before and after treatment. There was no demonstrable change in carbohydrate metabolism as a result of the treatment. The tests were performed from three weeks to four months after therapy with the synthetic compound was started.

The effect of the desoxycorticosterone acetate on the blood pressure is apparently dependent on dosage. When the amount of the drug used is in excess of the daily requirement of the patient there will occur an increase in blood pressure which may even reach alarming levels. Thus three of our patients developed a definite hypertension, and one of this group manifested anginal symptoms which incapacitated him almost as completely as did the original uncontrolled Addison's disease. When the dosage is reduced the blood pressure will fall. Although the effect of the synthetic material on the blood pressure occurs promptly, hypertensive levels are not reached until after two to four weeks of constant therapy. It might be proper to point out here that treatment with the old adrenal cortex extract produced no marked changes in the blood pressure.

TABLE 2.—*Amount of Desoxycorticosterone Acetate Absorbed Daily from the Implanted Pellets as Determined by Removal of Pellets from Two to Six Months After Implantation*

Patient	Date of Implantation of Pellets	Weight of Pellets, Mg.	Date of Pellet Removal	Weight of Individual Pellets Removed, Mg.	Desoxycorticosterone Absorbed Daily, Mg.
1. D. G.	9/16/39	128	12/11/39	96.7	0.36
3. J. S.	7/27/39	126	9/25/39	110.9	0.28
				110.9	0.28
				114.9	0.20
				110.0	0.29
			1/24/40	68.1	0.32
				74.8	0.28
				78.6	0.27
				85.0	0.22

The effect of the synthetic drug on the pigmentation of Addison's disease is relatively slight and probably nonspecific in character. Following adequate treatment and after the general condition of the patient improved considerably there occurred some decrease in the intensity of the pigmentation. In no instance did the pigmentation entirely disappear. Whatever effect is exercised is probably the result of increased hydration of the patient.

The effect of the pellets is identical with that of the injection of the synthetic substance in oil. It must be

remembered, however, that when pellets are used the daily requirement of the desoxycorticosterone acetate is approximately from 60 to 75 per cent of that which is needed when the drug is given by injection. The pellets, then, have the advantage of being the more economical. However, after the pellets are implanted, control of the patient is difficult and the development of complications due to excessive medication requires surgical intervention to reduce the dosage. In deciding on the number of the pellets to be implanted in a patient with Addison's disease, the daily requirement must first be determined with intramuscular injections of the synthetic compound. Calculations are based on the fact that a pellet weighing from 100 to 150 mg. will liberate approximately 0.3 mg. of the drug daily (table 2). We feel that it is wiser to implant less than the required number of pellets and to supplement treatment with some additional salt by mouth (from 3 to 5 Gm.) daily. In this way the dangers of unfortunate complications are lessened. The dangers to be borne in mind in the use of this new drug are development of hypertension, edema and heart failure. The intelligent use of the synthetic compound requires careful clinical observation of the patient and adequate laboratory facilities for repeated blood electrolyte determinations. A word of caution must be said about indiscriminate use of this synthetic drug in various forms of asthenia. It is a powerful weapon, and until its pharmacologic actions are better understood its use should be restricted to patients with well defined Addison's disease.

SUMMARY

1. Five patients with Addison's disease were treated with intramuscular injections of desoxycorticosterone acetate in oil.

2. In four of these patients pellets of crystalline desoxycorticosterone acetate were subsequently implanted.

3. The disturbed blood electrolyte pattern is readily restored to normal with the aid of this new drug. It also exercises a marked salutary effect on the sense of well-being of the patients.

4. It produces marked increase in the blood pressure but exercises no effect on carbohydrate metabolism and on the pigmentation.

5. Pellets are more economical to use than are injections. They are, however, associated with greater danger of complications, since the control of the amount of the drug liberated is difficult and may require surgical intervention.

6. The dangers to be borne in mind with the use of the synthetic compound are development of hypertension, edema and heart failure.

7. Pellets weighing approximately 125 mg. liberate from 0.20 to 0.36 mg. of desoxycorticosterone acetate daily.

1155 Park Avenue.

Tuberculosis Death Rate.—In most parts of the world where statistics have been kept, the death rate from tuberculosis has been steadily declining for about one hundred years. About 1780 the estimated death rate from consumption in England was 650 per 100,000 living inhabitants. It is expected that the death rate in the United States will fall below 45 per 100,000 in 1940. According to Dublin, this will represent a decline of 37 per cent in the last ten years, and a decline of 61 per cent in the last twenty years. In forty years the death rate has dropped 76 per cent.—Webb, Gerald B.: Tuberculosis—Present and Future, *J. Lab. & Clin. Med.* **26**:287 (Nov.) 1940.

ROENTGENOLOGIC GROUP EXAMINATIONS FOR PULMONARY TUBERCULOSIS

IN NEGROES IN CHICAGO: PRELIMINARY REPORT

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Because of the high incidence of tuberculosis among persons who have been exposed to massive infection from others, x-ray examinations of such contacts have been a routine practice in the Chest Clinic of the University of Chicago since 1929. The convincing experience that early tuberculosis is most successfully found among those who, because of the absence of symptoms, are unsuspected led in 1932 to the initiation of a case finding program among students, faculty and hospital employees. The results were in keeping with those

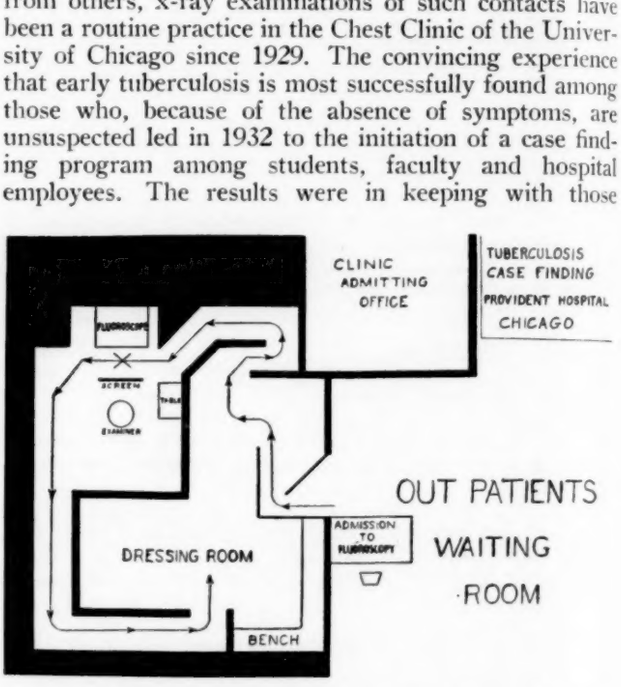

Fig. 1.—Arrows indicate route of patient through fluoroscopic plant.

reported from similar institutions and gratifying enough to continue the examinations as a university and hospital routine.

In 1934 the practice was extended to the expectant mothers seen in the clinic of the Chicago Lying-in Hospital because of the many unpleasant experiences with previously unrecognized tuberculosis among that group of patients and because they are an easily accessible group of healthy although physiologically strained persons. To date about 10,000 pregnant women have been examined. The published results from the first 4,000 indicated that slightly more clinically important tuberculosis is found by routine fluoroscopy of the chest than syphilis is by routine serologic tests.

SELECTION OF GROUP

Since the studies among the previously mentioned groups would not indicate the real proportions of the problem of unsuspected tuberculosis in the general population, it was desirable to gain access to still another

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From the Department of Medicine, University of Chicago, and the Provident Hospital.
Drs. R. W. Vines, J. L. Batty, H. H. McClanahan, and S. J. Gray of the Department of Medicine, University of Chicago, gave valuable assistance in the examinations.
Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

group which, judged by its average economic status and according to published reports, would give a more accurate picture of the universal distribution of the disease. Because of our failure to reach those persons employed in the industries, we were glad to accept the generosity of the Julius Rosenwald Fund and the invitation of the Provident Hospital of Chicago to examine the patients in the outpatient department of that institution. The higher mortality of tuberculosis in the Negro than in the white population—in Chicago seven times higher—makes this a particularly suitable group. Furthermore, no large scale case finding program among Negroes carried out by x-ray examination has been reported from a metropolitan area until an extensive report was published by Edwards[1] from New York. His figures on the incidence of tuberculosis are close to our own. Of the proposed 30,000 examinations, 10,000 have been completed. The analyzed results and experience from the first 9,000 are presented in this preliminary report.

Although clinic patients cannot be considered a group of supposedly healthy persons, the application of the principle to examine all of them, regardless of the nature of their complaints, seems to have resulted in a fair cross section of the Negro population. To improve further the representative nature of the group, Negroes of nonpatient status were then invited to be examined. Up to the present time these nonclinical persons constitute nearly one third of the total number examined and tend to equalize the results of this survey with those of a wholly nonclinical group.

Although the object of the program is essentially the search for tuberculosis in adults, we included any children presented to us by relatives or guardians and, in addition, several special groups of juveniles (Boy Scouts and high school students). The distribution of nonclinic persons and clinic patients and the differential between new and return patients among the latter classification are indicated in table 5.

To avoid delay in the routine function of the clinic and to plan the program along with the work of the clinic staff, the examinations were carried out next to the waiting room of the outpatient department and admitting office. They precede the examinations in the clinics. A special fluoroscopic plant (fig. 1) was constructed through which large numbers of persons can pass in a very short time. A standard vertical fluoroscope was reconstructed to permit unhindered passage behind the screen (fig. 2). The examination of approximately 16,000 new patients annually together with return patients and special groups requires considerable speed and a minimum of friction in the organization.

The recording system consists of a form containing four different parts representing the diagnosis (to be attached to the clinic record), the results of examinations (which are retained by the investigators), a requisition blank for x-ray films and a memorandum for the social worker (fig. 3). The presence or absence of pathologic changes is indicated by checking the printed items. Very little writing is required. The patient's personal record is filled in by helpers who are provided by the WPA and NYA organizations.

CHARACTERISTICS OF GROUP

The 9,000 persons examined included 1,000 juveniles, consisting of two special groups examined: 506 members of Negro Boy Scout troops and 494 students of one of the large Negro high schools of Chicago's south side. The average age for the entire group was 35.5 years, with a standard deviation of 15.5 years, which means that two thirds of the group fall between 20 and 51 years of age. These distributions are illustrated in figure 4.

Approximately twice as many females as males were examined, the proportion being 63.5 per cent females and 36.5 per cent males.

Approximately half of the total number examined were return patients to the Provident Hospital Clinic. The remainder were fairly evenly divided between new clinic patients and nonclinic persons.

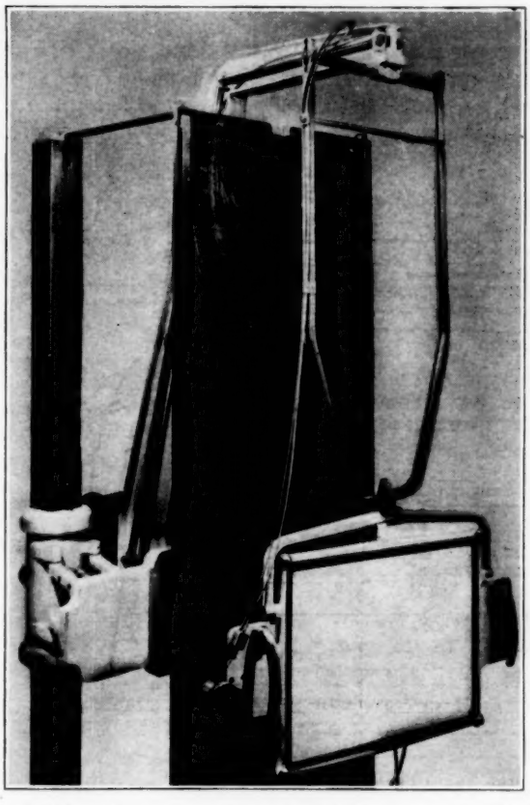

Fig. 2.—Vertical fluoroscope constructed for group examinations. Lateral arm has been replaced by overhead beam from which fluoroscopic screen is suspended, permitting continuous passage of patients behind screen from right to left. Shutter controls are attached to fluoroscopic screen by way of wire cables illustrated in the foreground.

Figure 5 shows the distribution for these three clinical classifications, for the entire group and without the 1,000 children.

OTHER OBSERVATIONS—NONPULMONARY DISEASE

In addition to finding disease in the lungs, it was inevitable that the fluoroscopic technic should reveal the presence of other, nonpulmonary, disease in the chest. In fact, 20 per cent of the total were found to have other disorders of the chest.

In most instances of the occurrence of nontuberculous disorders, x-ray examinations were not ordered. A complete analysis of the various nontuberculous conditions found has not yet been compiled. Very common were evidences of disease of the cardiovascular system, such as enlarged and mitral hearts, widened aortic shadows and aneurysms; evidence of old pleural involvement in the form of pleuritic residuals, some of them calcified. Scoliosis was not infrequent. One instance

1. Edwards, H. R.: Tuberculosis Case Finding: Studies in Mass Surveys, Am. Rev. Tuberc. (supp.) **41**: 3 (June) 1940.

of spontaneous pneumothorax (without symptoms) was discovered and a small number of cases of pneumonic infiltration, pulmonary tumor and other nontuberculous pulmonary diseases were found. Of the minor abnormalities of structure, various anomalies of the bony thoracic cage, including cervical ribs and vena azygos lobes, were the most common. Two cases of situs inversus were discovered. Among the 560 x-ray films taken, the most common nonpulmonary conditions were pleuritic residuals and cardiac enlargement.

ANALYSIS OF X-RAY FILMS

Among the 9,000 persons examined, in 574 instances (6.4 per cent) there were fluoroscopic changes sufficient to justify ordering x-ray examinations, one to every 15.7 persons examined. Of the 574 x-ray examinations ordered, 560 actually were done, or 97.6 per cent. Considering the difficulty of persuading persons to return a second time for the purpose of having the x-ray examination made, this figure is very high, and much of the success obtained in this regard was due to the unceasing efforts of the social service worker.

Of the fourteen persons who had manifestations on fluoroscopy not confirmed by x-ray examination (2.4 per cent of x-ray examinations ordered), five presented sufficiently definite conditions to be included with those judged to have tuberculosis. The other nine have been assumed to have no pulmonary disease or have clinically unimportant disease.

Of the 560 x-ray films taken, 32.2 per cent proved to show no pulmonary disease, 15.5 per cent to show definite but clinically unimportant pulmonary disease and 52.3 per cent showed definite pulmonary tuberculous pathologic changes judged to be of actual or potential clinical importance. Thus, in 380 instances x-ray films were positive, 77.1 per cent judged to be clinically important and 22.9 per cent clinically unimportant. These figures are summarized in table 1.

The 374 persons whose x-ray films were judged to show definite pulmonary changes were classified as to type of pathologic condition and as to the stage of the tuberculous disease.

Seventy-two per cent were minimal, 19 per cent moderately advanced and 9 per cent far advanced.

The productive-fibroid type of pathologic change was found to have the greatest incidence, occurring in 31.3 per cent of the cases. Second most frequent were the fibrocaseous and fibrocalciocaseous types, occurring in 22.5 per cent. The clinically important pathologic types, exudative caseous and exudative, occurred in 13.6 per cent and 9.9 per cent, respectively (table 2).

INCIDENCE OF DISEASE

To the 380 cases presenting positive signs on x-ray examination were added five cases in which the fluoroscopic observations were sufficiently definite to be unmistakable, making a total of 385 persons of the 9,000 examined, or 4.3 per cent, who were found to have definite pulmonary tuberculosis. Eighty-seven were judged to have clinically unimportant pulmonary disease (though in many instances such persons are under clinical observation and their contacts have been examined), an incidence of 1 per cent. Thus 298 persons, or 3.3 per cent of the entire group, proved to have clinically important pulmonary disease.

The incidence of tuberculosis was actually slightly greater than these figures indicate when the special groups of Boy Scouts and high school students were excluded, the respective figures for all pulmonary disease and clinically important tuberculosis then being 4.65 and 3.6 per cent (table 3).

INCIDENCE OF TUBERCULOSIS ACCORDING TO AGE

In conformity with the observations of many investigators, there was found to be a considerable difference in the incidence of tuberculosis in various age groups. In general, the incidence was above the average for the entire group below 10 years of age and above 45 and below the average for the group between the

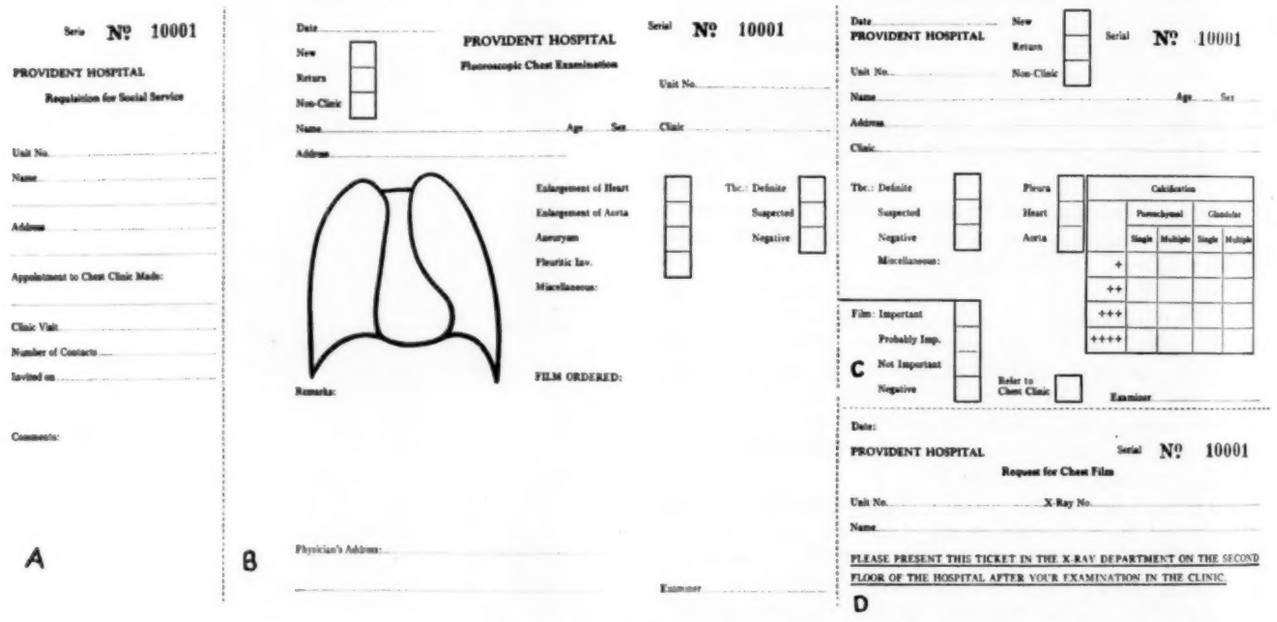

Fig. 3.—Type of record filled out for each patient examined by fluoroscopy. Sheets are numbered serially. Stub at left (*A*) is used only when important clinical disease is found, for purposes of clinical and social follow-up. Main portion of sheet (*B*), containing diagrammatic representation of pathologic condition, is attached to patient's clinic record. Upper right hand sheet (*C*) is retained in files permanently. It includes the final diagnosis made from x-ray films and the statistics for a study on tuberculous calcifications. Stub in lower right hand corner (*D*) is used only when x-ray examination is required and ordered on main portion of sheet (*B*) to confirm fluoroscopic examination.

ages of 10 and 45. Table 4 gives the figures for all positive pulmonary manifestations by age groups, for both the 1,000 children of the special groups and the 8,000 others examined.

TABLE 1.—*Clinical Classification of Cases Examined by X-Rays*

	Number	Per Cent	Per Cent All X-Rays
Pulmonary disease			
Clinically important	293	77.1	52.3
Not clinically important	87	22.9	15.5
Total pulmonary disease	380	100.0	
Negative	180		32.2
Total x-rays	560		100.0

TABLE 2.—*Classification of Cases of Tuberculosis Found by X-Ray Examination*

	Minimal	Moderately Advanced	Far Advanced	Total	Per Cent of Total
Exudative (predominantly exudative)	28	7	2	37	9.9
Exudative caseous	17	19	15	51	13.6
Caseous	4	0	1	5	1.3
Productive (fibroid)	102	14	1	117	31.3
Fibrocaseous (fibrocalciocaseous)	46	26	12	84	22.5
Calciocaseous	57	4	0	61	16.3
Calcified	15	1	0	16	4.3
Miliary, active	0	0	1	1	0.3
Miliary, healed, calcified	0	2	0	2	0.5
Totals	269	73	32	374	
Per cent total	71.9	19.5	8.6		100.0
Number with cavities	0	17	26	43	
Per cent cavernous	0.0	23.3	81.3	11.5	

When only clinically important tuberculosis of the lungs is considered, there is also a marked variation as to the incidence in different age groups. The greatest incidence is in the very young and the old. As compared with a total group average incidence of 3.3 per cent, children under 15 and men and women above 50 were found to have a relatively high incidence and those between 15 and 50 a relatively low incidence. This is illustrated graphically in figure 6 for the group exclusive of the 1,000 juveniles. It is to be observed from these figures that persons in the third decade of life had the lowest incidence of important pulmonary disease.

INFLUENCE OF VARIOUS FACTORS ON INCIDENCE OF DISEASE

When the total group of 9,000 is subdivided into several categories, according to various criteria, and the incidence of tuberculosis in each category is calculated, additional information is gained as to where tuberculosis may be found. Table 5 summarizes these figures. The 1,000 Boy Scouts and high school students have been excluded from this analysis, and only clinically important pulmonary disease is considered, but inclusion of the 1,000 juveniles and of clinically unimportant pulmonary disease does not greatly alter the results.

Sex.—The incidence of clinically important pulmonary disease is approximately twice as frequent in males as in females.

Clinical Status.—Patients coming to the clinic for the first time have nearly half again as much tuberculosis as do patients previously registered and examined. Nonclinic persons examined were found to have an incidence of clinically important pulmonary disease slightly higher than return clinic patients but definitely lower than new clinic patients.

Calcifications.—Those patients found to have calcifications, either parenchymal or glandular, proved to have more clinically important pulmonary disease than persons without such calcifications. This difference was more marked when the 1,000 children of the special groups were included.

COMMENT

In previous communications we have expressed and reiterated our trust in the fluoroscopic method of examination if it can be supplemented by chest films for all positive and suspected conditions. No detailed discussions of the merits of fluoroscopy as compared to other methods of x-ray examination are offered in this paper. An appraisal of the value of the various technics employed in group examinations of the chest, including the tuberculin test, has been attempted in another article.[1a] Recent controversy, however, induces us to add here that we consider fluoroscopy a wholly reliable method if it is employed by physicians who are well trained in pulmonary pathology and in the technic of the method. Its use is limited not by an inferiority to other means of examination in recognizing disease but rather by its inability to furnish an objective, per-

TABLE 3.—*Incidence of Positive Examinations*

	Number Examined	Clinically Unimportant		Clinically Important		Total Pulmonary Disease	
		No.	%	No.	%	No.	%
Special groups of children	1,000	5	0.5	8	0.8	13	1.3
Others	8,000	82	1.0	290	3.6	372	4.65
Totals	9,000	87	1.0	298	3.3	385	4.3

TABLE 4.—*Age Incidence of Positive Examinations, Clinically Important and Unimportant, in 1,000 Juveniles and 8,000 Others*

	Total Examined		Negative		Positive (Clinically Important and Unimportant)				Total Positive	
					Juveniles		Other			
	Juveniles	Other	Juveniles	Other	No.	%	No.	%	No.	%
0- 4	0	30	0	28	0	0.0	2	6.7	2	6.7
5- 9	37	140	37	134	0	0.0	6	4.3	6	3.4
10-14	490	252	484	241	6	1.2	11	4.4	17	2.3
15-19	468	517	461	499	7	1.5	18	3.6	25	2.5
20-24	5	706	5	685	0	0.0	21	3.1	21	3.0
25-29	0	899	0	866	0	0.0	33	3.7	33	3.7
30-34	0	994	0	956	0	0.0	38	3.8	38	3.8
35-39	0	1,077	0	1,029	0	0.0	48	4.5	48	4.5
40-44	0	909	0	863	0	0.0	46	5.1	46	5.1
45-49	0	718	0	689	0	0.0	29	4.0	29	4.0
50-54	0	618	0	578	0	0.0	40	6.5	40	6.5
55-59	0	485	0	446	0	0.0	39	8.0	39	8.0
60-64	0	334	0	313	0	0.0	21	6.3	21	6.3
65-69	0	178	0	169	0	0.0	9	5.1	9	5.1
70-74	0	45	0	36	0	0.0	9	20.0	9	20.0
75-79	0	10	0	8	0	0.0	2	20.0	2	20.0
80-84	0	2	0	2	0	0.0	0	0.0	0	0.0
85-89	0	1	0	1	0	0.0	0	0.0	0	0.0
Records missing	0	85	0	85	0	0.0	0	0.0	0	0.0
Total	1,000	8,000	987	7,628	13	1.3	372	4.65	385	4.3

1a. Bloch, R. G.: Case Finding in Tuberculosis, to be published in the American Review of Tuberculosis, February 1941.

manent record of negative observations; this makes it impracticable wherever a liability for the examining agency may be involved as, for example, in the entrance examinations for the fighting forces. Employing fluoroscopy in the present survey but using single paper

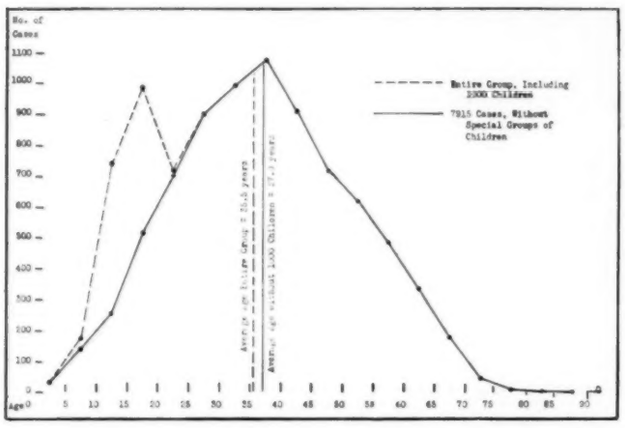

Fig. 4.—Age distribution of 8,915 persons examined by fluoroscopy.

roentgenograms for reasons of economy, we found that the paper films were not nearly as satisfactory for qualitative analysis of tuberculous lesions as is possible from transparent films. In the clinical appraisal of our observations we have refrained from using the terms "active" and "inactive" and similar qualifying adjectives. While the activity of many tuberculous lesions from x-ray diagnosis alone cannot be doubted, there are many in which only clinical and sometimes prolonged observation can decide the degree of activity. Certainly the absence of activity cannot be determined except perhaps in small and definitely calcified foci. The terms "clinically important" or "clinically unimportant" under which the results have been grouped are not meant to express final judgment as to the clinical importance of the lesion but only to give our impression gained from the chest films. As a rule, we are not in a position to follow most of the patients clinically. The great majority are referred to the health authorities for further observation and care. As yet too little time has elapsed to appraise the correctness of our impressions. We are

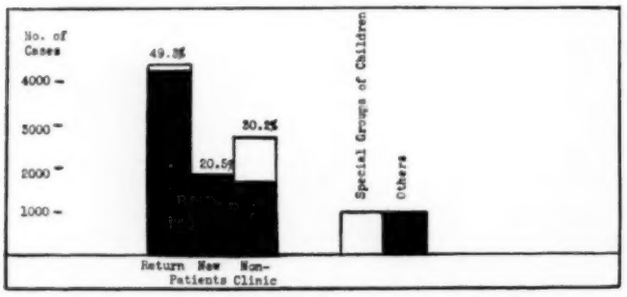

Fig. 5.—Clinical status of 8,915 persons examined by fluoroscopy.

aware of the large number of small tuberculous infiltrations to which we attach clinical significance. We know that this may evoke some criticism and occasional ridicule. There seems to be widespread and considerable discrepancy between the desire to make a diagnosis of early tuberculosis and the attention which it receives after it has been found. The circumscribed "spot in the lung," often presented as negligible to the patient and remaining untreated, is one of the most frequent small forms of caseous tuberculosis which may excavate rapidly. In figure 7 is demonstrated the excavation of two such lesions, discovered in supposedly healthy persons during group surveys.

Figure 8 demonstrates how a similar small focus developed into advanced tuberculosis during a period of seven years. These roentgenograms are of patients of the white race. There is reason to assume that the same lesions in a Negro would have developed more rapidly, other factors being equal.

The greater tendency toward exudative tuberculosis and unfavorable progression of tuberculous disease in the Negro compared with observations in the white race seems well established and is attributed to a lesser immunity of the race.[2] There is no discrepancy between this experience reported from autopsies and the clinical predominance of the productive types of disease found in surveys. The average age of our adult group was 37 years, whereas the largest number of deaths from tuberculosis in Negroes occurs during the third decade in life. It seems, therefore, that a large proportion of

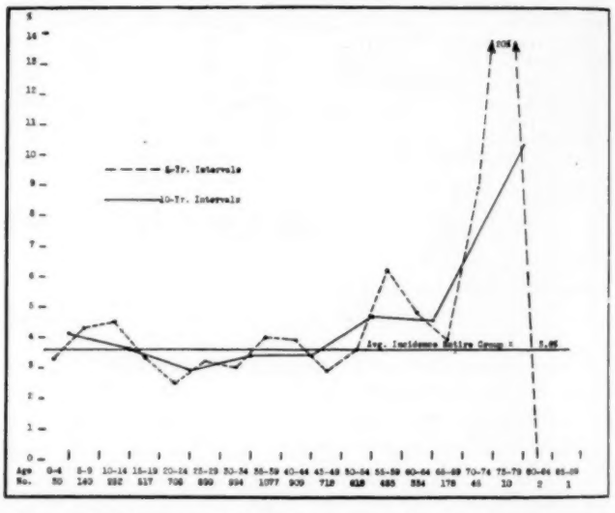

Fig. 6.—Incidence of clinically important pulmonary disease found on fluoroscopy, by five year and ten year age groups (8,000 cases).

our patients are those who have been able to survive early exudative lesions by favorable tissue response in the lung. However, many of them remain, at best, stationary without signs of definite healing, which explains the much higher incidence of clinically important lesions (3.3 per cent) among the total of pathologic changes (4.3 per cent) than have been found in the white population, in which the respective figures are 1.2 per cent and 3.5 per cent.

The striking preponderance of minimal over moderately and far advanced tuberculosis in our group is almost the reverse of the distribution found in sanatoriums[3] (fig. 9). While it demonstrates the essential

2. Pinner, Max, and Kasper, J. A.: Pathological Peculiarities of Tuberculosis in the American Negro, Am. Rev. Tuberc. **26**: 463-491 (Nov.) 1932. Israel, H. L., and Payne, H. M.: Tuberculosis in the Negro: Clinical and Roentgenological Characteristics, ibid. **41**: 188-209 (Feb.) 1940.

3. Myers, J. A.: Collapse Therapy and the Ambulatory Patient, J. Thoracic Surg. **3**: 175 (Dec.) 1933. Wherrett, G. J.: Follow-Up Information on 2,031 Tuberculosis Patients One to Thirteen Years After Discharge from Sanatoria, Am. Rev. Tuberc. **31**: 62-73 (Jan.) 1935. Harper, F. R.: Phrenic Interruption Combined with Artificial Pneumothorax for Pulmonary Tuberculosis, ibid. **35**: 475-483 (April) 1937. Franklin, R. M.; Zavod, W. A., and Perez, H. E.: The Frequency of Artificial Pneumothorax Refills in Tuberculosis: Preliminary Report, ibid. **35**: 513-529 (April) 1937.

value of examinations among the unsuspected population, it may be due partly to the more frequent occurrence of productive lesions after the third decade of life and, to some extent, to our inability to bring under observation the patients with far advanced disease who

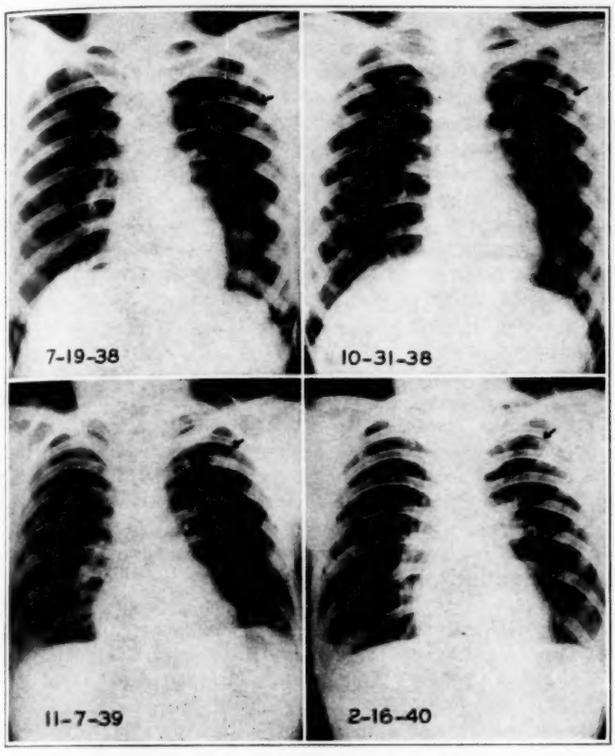

Fig. 7.—On the left, two patients with a subapical caseous minimal tuberculosis. On the right, the same lesions after excavation with resulting positive sputum and symptoms. The time interval during which excavation occurred in each case was about three months.

had been the source of infection of many of our patients with minimal infection. Insufficient funds did not permit the establishment of the extensive social service which would have been needed for that purpose. However,

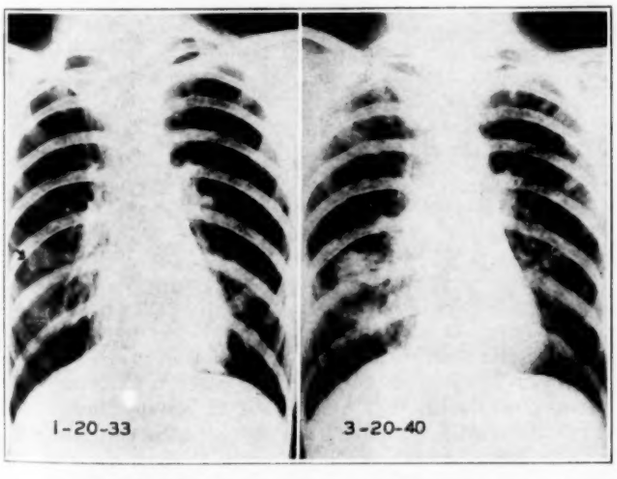

Fig. 8.—Small tuberculous focus seen at left proved to be of great clinical importance by subsequent development into far advanced tuberculosis, as demonstrated at right.

these persons do not remain unnoticed but are brought to the attention of the city health authorities.

The higher incidence in juveniles, which is recorded in table 4 as above the average incidence of the total group, is not in accordance with the general experience concerning the age distribution of tuberculosis. Our higher figures seem to be due to a practice of considering any not definitely calcified lesion in children as clinically important in order to insure continued clinical observation.

The occurrence and significance of calcification is an object of special investigation of our study. The detailed results will be reported elsewhere. For epidemiologic considerations it is interesting to note that the incidence of clinical tuberculosis in the presence of calcification was 1.6 per cent greater, or half again as high as in persons without calcified foci. This observation again throws doubt on the traditional conception of the protective value of first tuberculous infections.

That a special search for tuberculosis in a general clinic is not superfluous is demonstrated by the incidence of 2 per cent clinical pulmonary disease in the return patients of the clinic. It is a common experience

TABLE 5.—*Influence of Various Factors on Incidence of Clinically Important Pulmonary Disease (7,915 Cases, Exclusive of Special Groups of Children)*

	Total Examined		Incidence	
Category	Number	Per Cent	Number	Per Cent
I. Sex				
Male	2,593	32.8	147	5.7
Female	5,322	67.2	143	2.7
Total	7,915	100.0	290	3.7
II. Clinical status				
Return patients	4,365	55.1	143	3.3
New patients	1,828	23.1	84	4.6
Nonclinic persons	1,722	21.8	63	3.7
Total	7,915	100.0	290	3.7
III. Calcifications				
With calcifications	1,426	18.9	72	5.0
Without calcifications	6,489	81.1	218	3.4
Total	7,915	100.0	290	3.7

that pulmonary lesions are overlooked in examinations in specialized clinic departments largely because of insufficient use of x-ray diagnosis. However, not only pulmonary disease is revealed by the addition of this routine to clinic work; the examiner at the fluoroscope is in a position to call the clinician's attention to large numbers of patients with extrapulmonary disease. This is indicated by the incidence of 20 per cent of such extrapulmonary pathologic changes among which cardiovascular disease is the most prevalent. To a large measure the figure is due to the frequency of vascular syphilitic involvement but more significantly also to the occurrence of enlarged and otherwise abnormal cardiac shadows seen in children whom we were able to refer to clinical examination. This experience alone seems to justify fluoroscopic group examinations among children.

Altogether, our experience so far has justified the time, effort and expense [4] required by the experiment;

4. The cost of the survey, estimated on the basis of an expected number of 30,000 examinations, will be 10 cents per examination and approximately $3 for the discovery of each clinically important case of tuberculosis. Since all physicians participating in the examinations are donating their services, the available funds were used for the establishment of the plant, for the purchase of equipment and for administrative expenses. Adequate remuneration of the medical examiners would about double the cost per case. This would still be lower than the expenditure for other tuberculosis surveys concerning which the information was available.

we wish to emphasize the necessity of roentgenologic group examination in the fight against tuberculosis in Negroes as well as in other groups of the population. A clinic offers the opportunity to conduct a routine roentgenologic search for unsuspected tuberculosis in a never ending flow of the populace without the necessity of solicitation. Since dozens of cases of tuberculosis are missed throughout the country every year in physicians' offices, in clinics and in hospitals, since thousands go through life unconscious of their disease and therefore do not seek medical help, in other words since tuberculosis is still one of the most urgent problems in the preservation of the health of the people and, furthermore, since all this is due to two factors, namely (1) that physical examinations frequently fail to reveal the disease and (2) that much active tuberculosis causes no symptoms, it is the demand of our time and of the better knowledge acquired in recent years that all physicians, wherever they practice their profession and whatever their special medical interest may be, help to educate the people that tuberculosis must be searched for everywhere and in everybody.

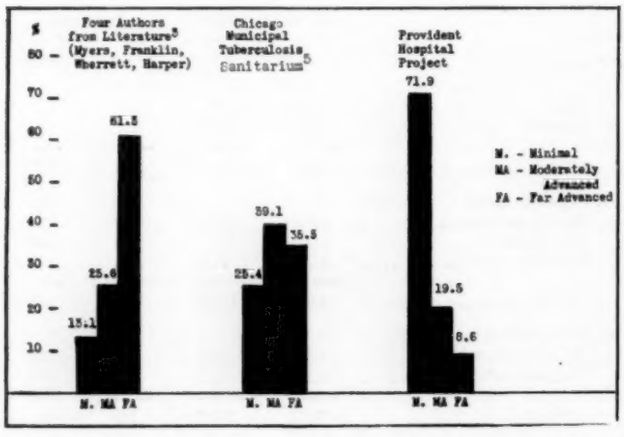

Fig. 9.—Comparison of stages of tuberculosis of groups under treatment in sanatoriums, reported to health authorities and found by fluoroscopy case finding program.

There is hope that group surveys on an ever increasing scale will be organized throughout the country and that we are not far from the day when laws and regulations will make an x-ray examination of the chest a prerequisite for employment in domestic service, in the teaching professions, in industry, in the fighting forces and for the issuance of a marriage license. It appears that there is a weapon available for the fight against tuberculosis which, without any spectacular advance in scientific research, can carry the profession far toward the elimination of the disease as a major public health menace.

The better opportunity of finding or, at least, of suspecting the presence of extrapulmonary disease adds to the value of such examinations in the admitting department of a general clinic. We suggest, therefore, that roentgenologic examination of the chest of all patients should become a routine procedure in all medical institutions.

950 East Fifty-Ninth Street.

5. Tice, Frederick, and Hruby, A. J.: Collapse Therapy at the Chicago Municipal Tuberculosis Sanitarium: A Critical Study of 8,083 Cases, Bull. City of Chicago Municipal Tuberc. Sanitar. **15-16-17:** 30, 1935-1936-1937.

ABSTRACT OF DISCUSSION

DR. MAX PINNER, New York: The authors have chosen the x-ray approach without previous tuberculin test. One should not draw general conclusions from this. Each worker should determine the feasibility or the advisability of doing tuberculin tests or not doing tuberculin tests before x-ray examination. In the population that Dr. Bloch and his collaborators have examined the incidence of negative reactors is undoubtedly minimal, and no saving would be had by doing tuberculin tests. On the other side, in rural communities it is probably advisable to do tuberculin testing first because from 50 to 70 per cent of x-ray films may be saved by this method. There is a great deal of discussion about the value and reliability of fluoroscopy as against roentgenography. I believe that it cannot be solved in a general way. Fluoroscopy presupposes, more than roentgenography, very careful training and experience, and whoever has it can probably go far with this method, complemented by x-ray films as indicated. In the surveys on Negroes, many were probably astonished that not a greater percentage was found; as a matter of fact, in surveys of Negroes and white people living under identical living conditions, such as done by Dr. Edwards in Harlem, the percentage of morbidity of Negroes was less than in white persons; nevertheless the mortality rate is a multiple of the white rate, indicating that the disease in Negroes is much shorter and much more rapid in development. This would indicate that an occasional survey in Negro groups is not of much use because not all the early cases which will develop next year are found in the surveys this year; it will be necessary to make the examinations at rather short intervals. The acuity of the disease in the Negro as compared with the white person I think is well exemplified by the autopsies such as my associates and I reported for Detroit and Chicago. One of the outstanding factors of differences statistically seen is the much greater frequency of disseminated lesions in the Negro as compared to the white person. Incidentally, in this autopsy work we were struck by the relative frequency of apparently completely healed, calcified, primary complexes in Negroes and particularly in Negroes who, on reinfection, developed lesions that looked very much like primary infections again. We concluded from that that the Negro who goes through his primary infection becomes allergic without increasing his immunity, as the white person apparently does.

DR. H. R. EDWARDS, New York: This paper in many instances is a close duplicate of the work we have been doing in New York. I should like to offer for comparison the results of 70,000 examinations in Harlem, by the rapid paper x-ray method, which I believe to be superior to fluoroscopy. The observations indicate in general about twice as much tuberculosis among the white population above 25 years of age as among the Negroes, whereas below that age the ratio is the reverse. In another study involving 53,000 recipients of home relief the same distribution by color and age was found. Our definition of clinically significant tuberculosis is essentially the same as that used by Dr. Bloch. The distribution by sex and color indicates white males 5.7 per cent, Negro males 3.4, white females 3.3, as compared with Negro females 2.2, an average of 3.1 considered active and 17 per cent considered arrested; also there is a higher percentage of arrested chronic pulmonary tuberculosis among white males and females than among Negro males and females. A chart representing some 169,000 individuals, ranging from high schools with four cases in a thousand to transient males with 43 cases per thousand convinces me that the problem of tuberculosis is closely allied to specific age, sex, racial and economic factors. It is primarily an adult problem, more serious among the Negroes and those living on low income or in tenement houses, and the unemployed than the employed and higher economic levels of society. About 70 per cent of the patients were found by the survey method in the minimal stage at a time before they have spread their infection to others and when the most can be done to restore them at the least cost to the community.

DR. ARTHUR B. ROBINS, New York: I want to amplify some of the remarks made by Dr. Edwards in emphasizing the age factor in connection with the difference between white and Negro tuberculosis. I have been interested in the question of the relationship between mortality and morbidity. When I started this work I was struck by the fact that the group with the predominant mortality seemed to have the lower morbidity, and in every study that my associates and I have done that has been a consistent finding. Even in those under 25, among whom the morbidity in the Negro is higher in a ratio of about 4 to 1, the ratio of deaths is from 8 to 12 to 1; and, in those over 25 among whom the mortality is from four to five times as high, the morbidity is lower than in the white population. We have also been interested in the results of annual re-x-ray examinations of the patients and we have a group of about 9,000 individuals who were given x-ray examinations in the relief study in Harlem one year, and the negative ones given re-x-ray examinations the following year. In that group, which is made up of about 7,500 Negroes and 750 white persons, twenty-six cases of tuberculosis developed in people whose previous x-ray examinations had been entirely negative. It is of interest that twenty-one of those cases developed in the Negro group, two in the white group and three among Puerto Ricans. The incidence rates in those groups are approximately the same, although the group of 750 white individuals is too small to draw conclusions from. However, in an average period of eight months from the time of diagnosis, seven of the twenty-one cases developing in the Negroes have already proved fatal, indicating an annual mortality rate of 50 per cent in Negroes with negative x-ray examinations at the beginning of the study, who later developed tuberculosis. I think that this may have a great deal to do with the difference in morbidity and mortality figures, and I think it is rather an effective disposal of the objection that a major portion of those differences is related to the unwillingness of Negro patients to come in for x-ray examination or to accept treatment. We had no difficulty in getting those people, although they were classified as apparently healthy, back on two separate occasions, an average of a year apart.

DR. HAVEN EMERSON, New York: If Dr. A. J. Chesley of Minnesota is not in the room to give the information himself, I should like to call attention to a method of tuberculosis case finding that was applied, as far as I know, the first time in the laboratory of the Minnesota State Department of Health in the process of typing pneumonia sputum. All such pneumonia specimens were put through a routine examination for the tubercle bacillus, and 9 per cent were positive for the tubercle bacillus; of the cases of tuberculous infection so discovered, only 10 per cent had been previously reported as cases of tuberculosis to the state department of health. It is inexpensive, costing about 15 cents to have each pneumonia sputum examined for tubercle bacilli, and we are, as sanitarians, more concerned with the discovery of a case of tuberculosis with positive sputum in which recovery recently occurred from an acute pulmonary disease than with a large number of persons with relatively unimportant lesions, even though clinically significant, with negative sputum.

DR. ROBERT G. BLOCH, Chicago: Dr. Tucker has many more statistics on our observations which we could not show. There was also no time to go into the controversy as to the value of tuberculin case finding programs with x-ray examination alone. We have stated that we doubt the case finding value of tuberculin in the adult. All the x-ray methods have their advantages and disadvantages. We are aware that fluoroscopy has the disadvantage of not providing a permanent record and, furthermore, that it requires special training which not even the average chest specialist has. There needs to be a thorough training in the technic of fluoroscopy as well as in the pathology of the lung, and we ourselves have witnessed programs going on in which, on account of the inexperience of the examiners, the results were not as good as they might have been, and many cases of tuberculosis were missed. A word about the examinations among students and nurses: One of the objects in presenting this paper was to point out that the medical public and the public at large have been induced to believe in recent years, by a flood of publications from medical schools, universities and hospitals, that tuberculosis is largely a problem of the college student, the medical student and the nurses. This is definitely not so. The incidence of tuberculosis among students and among nurses is not appreciably higher than that in the average population of the same age. Besides, these are very small groups and they are economically and socially good groups. It is needless to say that everything possible should be done to protect students and nurses against the hazards of infection. Beyond that nothing needs to be said about them in public health efforts to find tuberculosis in the general population. The groups in which tuberculosis needs to be looked for primarily are the groups that Dr. Edwards has just presented. With reference to Dr. Haven Emerson's remarks, I should like to say that the sputum examinations among pneumonia patients in Minnesota merely indicate that a lot of tuberculosis is still being misdiagnosed as pneumonia.

Clinical Notes, Suggestions and New Instruments

THE DIAGNOSIS OF HERNIA

STEPHEN A. ZIEMAN, M.D., CHICAGO

In a few weeks the selective service act will be in effect. Inauguration of a selective service brings a new responsibility to the medical profession. The decision as to the ability of any registrant to perform full military service depends on the professional judgment of the local examining physician. Rejection of the candidate because of physical defect may prove demoralizing to the individual; mistake in diagnosis, costly to the government.

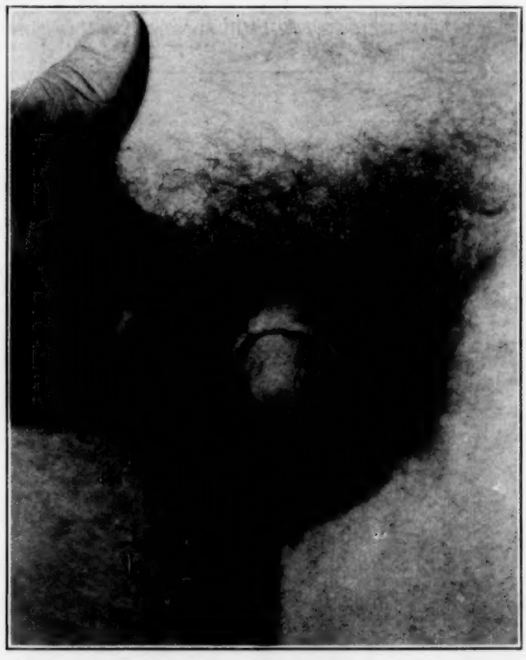

Fig. 1.—Usual method of hernial examination as described in textbooks.

The presence of a hernia in men of the draft age is a deterrant to military service, while the widespread prevalence of hernia in men of this age group necessitates a correct understanding on the part of the physician as to what constitutes a hernia. I consequently propose the following considerations in the hope

From the Surgical Department of Rush Medical College.

that they may be helpful in the diagnosis and differential diagnosis of hernia. Mistake in this matter is less the fault of the examining physician than it is inaccurate surgical teaching on this subject. To instruct the student that an impulse

Fig. 2.—Author's method of examining for hernia, using right hand for right side of patient.

perceptible on coughing or straining while the examining finger is in the external inguinal ring is diagnostic of a hernia is to create a misconception. A little thought on this point will

Fig. 3.—Author's method of examining for hernia, using left hand for left side of patient.

demonstrate the fallacy. The insertion of a finger into the external inguinal ring (fig. 1) produces a cremasteric reflex and consequently the cord structures are retracted or pushed upward by such a procedure, not infrequently without pain. When the patient is now advised to cough, the contraction of this muscle is overcome and a sudden relaxation results in the production of a thud on the examining finger from the cord structures.

Second, there are cystic and solid tumors, especially lipomatous masses in this region, which undergo a similar contraction owing to the action of the cremasteric muscle, and on its release these tissues may give an impulse and a false impression of a hernia.

Third, the differential diagnosis of hernia is not always an easy matter. Some surgeons challenge its possibility in many instances. To distinguish between a direct, an indirect or a femoral hernia with any degree of accuracy may constitute a surgical problem.

To help correct these conditions, I suggest a method which has proved very encouraging in clarifying these difficulties. The method (fig. 2), in brief, consists in placing the first, second and third fingers over the inguinal region in such a manner that the index finger rests on the so-called weak spot. The middle finger lies along the direction of the inguinal canal with the tip of the finger at the external inguinal ring, while the third finger controls the femoral canal and the fossa ovalis. With the hand in this position it is possible to perceive a peculiar sliding, pushing motion of a viscus under one or

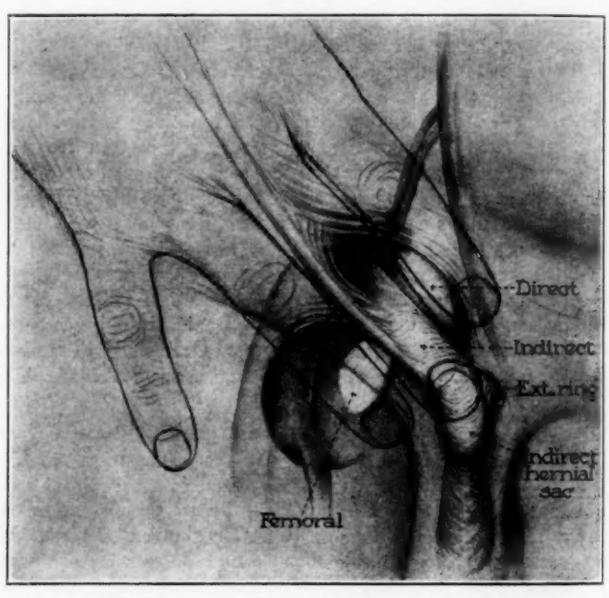

Fig. 4.—Relationship of the various hernias to the examining fingers.

another of the examining fingers when the patient is directed to cough or strain. Thus immediately a direct, an indirect or a femoral hernia is determined. If there is a bulging mass apparent to the eye, the examining hand forces the mass inward and again coughing or straining immediately differentiates the type of hernia present.

The patient is always examined in the upright position with the examiner standing somewhat behind and to the right (figs. 2 and 3), using the right hand for a right inguinal hernia, and to the left, using the left hand for a left inguinal hernia. This method in no way distorts the relationships of the parts in this region and obviates a palpation artefact. A peculiar gurgling, sliding or slipping motion under one or another finger (fig. 4) alone determines the presence of a hernia. The feeling of solid or cystic masses results in an entirely different sensation. I moreover feel that straining is a better method for eliciting the essential diagnostic factor than is coughing.

The diagnosis of a hernia in many cases may be reached on careless inspection, but the method here proposed is particularly helpful in borderline cases, cases of relaxed abdominal muscles or large external inguinal rings. The method, furthermore, has been attested at the operating table, where patients have been operated on and no hernial sac was demonstrable.

30 North Michigan Avenue.

Special Clinical Article

THE SURGICAL TREATMENT OF HYPERTENSION

RESULTS IN 350 CONSECUTIVE CASES TREATED BY BILATERAL SUPRADIAPHRAGMATIC SPLANCHNICECTOMY AND LOWER DORSAL SYMPATHETIC GANGLIONECTOMY

CLINICAL LECTURE AT NEW YORK SESSION

MAX MINOR PEET, M.D.
WARD WILSON WOODS, M.D.
ANN ARBOR, MICH.
AND
SPENCER BRADEN, M.D.
CLEVELAND

The evaluation of any surgical procedure in the treatment of a systemic disease can be reached only after an adequate period of carefully controlled and unbiased trial. This trial demands that certain fundamental conditions be strictly adhered to: 1. The surgical procedure must be utilized in a large number of cases and must remain identical in all cases. 2. The selection of cases must be based on constant criteria, fully investigated in each case before operation. 3. Postoperative results must be judged by the same criteria in an identical manner and on as many occasions as possible. 4. All cases in which operation is performed must be included in the results. 5. The trial must extend over a sufficiently long period of time to eliminate mere temporary effect of the operative procedure.

It is our purpose in this paper to present evidence that the surgical treatment of hypertension has fulfilled the demands of such a trial and consequently should now take its deserved place in the armamentarium of treatment of this disease.

The history of the development of the surgical treatment of hypertension has been reviewed elsewhere.[1] At present four distinct operative procedures are most commonly employed. Their results, studied over a long period of time, must decide the relative merit of each. They are adrenal denervation by celiac ganglionectomy;[2] subdiaphragmatic, extraperitoneal, bilateral resection of the splanchnic nerves with removal of the upper two lumbar sympathetic ganglions and the intervening chain;[3] bilateral transdiaphragmatic removal of the lower dorsal and upper lumbar sympathetic chain with its ganglions and the rami forming the splanchnic nerves,[4] and bilateral supradiaphragmatic splanchnicectomy and lower dorsal sympathetic ganglionectomy.[5]

The last named procedure was first introduced into this country by Peet in 1933 and has been used unaltered by him and his associates at the University of Michigan Hospital since that time. More than 500 patients have been operated on by the Department of Neurosurgery by means of this technic. The results of the total series are comparable with those presented in this study.

It is not within the scope of this paper to review the experimental work on the etiology of hypertension[6] nor will an attempt be made to define or classify the disease. Suffice it to say that evidence points to renal ischemia, no matter what the cause, as the usual basic factor in hypertension. The rationale on which we base our operative procedure is therefore the relief of renal ischemia by interruption of the sympathetic vasoconstrictor outflow to the kidneys.

The technic of bilateral supradiaphragmatic splanchnicectomy and dorsal sympathetic ganglionectomy has been described in detail.[5] Briefly it consists of bilateral paravertebral incisions, usually under avertin with amylene hydrate anesthesia, centering over the eleventh intercostal space. A 4 cm. section of the eleventh rib is removed subperiosteally from a point slightly distal to its articulation with the transverse process of the vertebra. The parietal pleura is retracted, exposing first the lower dorsal sympathetic chain with its rami forming the lesser splanchnic nerves, and still deeper the greater splanchnic nerve. A 9 to 13 cm. segment of the latter nerve is resected to its point of entry into the crus of the diaphragm. The sympathetic chain including the tenth, eleventh and twelfth ganglions and the lesser and least splanchnic nerves is next removed, the fibers of the diaphragm being split if necessary. The procedure is performed bilaterally in one stage. The average operative time is about one hour. The postoperative stay in the hospital averages about two weeks.

TABLE 1.—*Sex Distribution*

	Number	Per Cent
Males	165	47
Females	185	53
Total cases	350	

TABLE 2.—*Age Distribution at Time of Operation*

	Number	Per Cent
10 to 19 years	3	0.8
20 to 29 years	21	6
30 to 39 years	90	26
40 to 49 years	174	50
50 to 59 years	61	17
60 to 69 years	1	0.2
Total cases	350	

The selection of cases for operation for hypertension at the University Hospital is based on several relatively simple requirements. The patient is preferably not over 50 years of age, but numerous exceptions have been made. The renal function must be adequate as indicated by a urea clearance of more than 40 per cent of normal and a urine concentration above 1.012. No patient with a blood nonprotein nitrogen of more than 45 mg. per hundred cubic centimeters is accepted. The heart must be compensated and the general physical status of the patient adequate to withstand a major operative procedure. Patients with systolic blood pressures under 200 mm. of mercury are usually not advised to have the operation unless they have had an adequate

From the Department of Neurosurgery, University of Michigan Medical School.

Read in the Surgical Division of the General Scientific Meetings at the Ninety-First Annual Session of the American Medical Association, New York, June 11, 1940.

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5. Peet, M. M.: The Surgical Treatment of Hypertension, Proc. California Acad. Med. **5**: 58, 1935-1936; J. Internat. de Chir. **5**: 1-38 (Jan.-Feb.) 1940.

6. Goldblatt, Harry: Studies on Experimental Hypertension: XII. The Experimental Production and Pathogenesis of Hypertension Due to Renal Ischemia, Am. J. Clin. Path. **10**: 40 (Jan.) 1940.

trial of conservative medical treatment or unless their symptoms are so severe as to warrant the more radical surgical procedure. We are not yet prepared to recommend splanchnicectomy as a purely prophylactic measure, although we feel that for certain young patients with a strong hereditary background and the typical hyperlabile type of pressure such a recommendation might be made. No patient is operated on whose hypertension is known to be the result of primary disease of the kidney or other organs. Thus an attempt is made to rule out the following preoperatively: glomerulonephritis, pyelonephritis, pyonephrosis, renal or adrenal tumor, or endocrine disturbances accompanied by hypertension. In other words, patients selected for operation are those suffering from a primary type of high blood pressure for which no organic cause can be found.

TABLE 3.—*Distribution of Preoperative Blood Pressure Levels*

Pressure in Mm. of Mercury	Number	Per Cent
Systolic		
270 plus	7	2
240 to 269	69	20
210 to 239	150	43
180 to 209	109	31
140 to 179	15	4
Diastolic		
155 plus	42	12
140 to 154	86	25
125 to 139	106	30
110 to 124	95	27
95 to 109	21	6

TABLE 4.—*Subjective Symptomatology at Time of Operation*

	Number	Per Cent
Symptoms present	344	98
Symptoms absent	6	2
Total cases	350	

Herewith are presented the preoperative and postoperative results in 350 consecutive cases of hypertension in which bilateral supradiaphragmatic splanchnicectomy and lower dorsal sympathetic ganglionectomy has been performed by one surgeon (Peet) since 1933. The methods of study and the criteria by which the results have been judged are also presented.

METHODS OF STUDY

Each patient is examined preoperatively in the departments of medicine, ophthalmology, cardiology and roentgenology. Kidney function studies include determination of urea clearance, urine concentration and blood nonprotein nitrogen. Pyelograms are now made in all cases presenting the possibility of primary renal disease. A teleoroentgenogram checked by an orthodiagram and an electrocardiogram are obtained in each case. Frequent blood pressure determinations are taken by several independent observers and the readings averaged.

Postoperatively the patient is advised to return at definite intervals for check-up examination. Because of financial reasons it has frequently been necessary to have the patient return for such studies at our expense. Funds for this purpose were available through special grants to the department of neurosurgery by Mr. Jeremiah Milbank and the Aaron Mendelson Memorial Trust Fund. Approximately 65 per cent of the 350 patients included in this study have returned for one or more examinations at postoperative periods of from nine months to seven years. Acceptable data in the remaining cases have been obtained through the cooperation of the home physician. In only four of the 350 cases have we been unable to obtain reliable blood pressure determinations nine months or more postoperatively.

On his return for reexamination the patient was subjected to the following routine: Complete and detailed preoperative histories were personally retaken in order to check all preoperative data as to duration of hypertension, symptomatology and incapacitation. Interval histories were recorded in detail. The patient was reexamined by all departments which had examined him preoperatively, and these departments rendered an opinion as to the comparative progress or regression of the case in respect to their specific specialty. All postoperative statistics have been compiled on these opinions.

The blood pressure was taken at least once with the patient in a sitting position, four determinations being obtained from each arm. Whenever possible this was repeated subsequently. An arithmetical average of the systolic and diastolic readings was taken as the significant figure for that visit. It should be noted that these pressure readings were taken while the patient was ambulatory and under the considerable strain of frequent examinations by various departments as compared to preoperatively, when the pressure readings were usually taken with the patient on a regimen of bed rest.

Following this routine it was possible to obtain on each patient unbiased data and evaluation of the patient's course with regard to blood pressure, symptomatology, incapacitation, condition of the ocular fundus, renal function and cardiac status.

As a result of this comprehensive study, which has extended over a period of nearly seven years, an enormous mass of preoperative and postoperative data has been accumulated. Obviously such a fund of information could not be treated by ordinary methods. As a result, each specific item has been coded on tabulating cards, and the statistical correlations, appearing in the accompanying tables, compiled mechanically.[7]

CRITERIA

In order to evaluate the results of operation in the treatment of hypertension it was found necessary to establish certain criteria by which all cases could be judged and from which statistics could be compiled. Obviously these criteria are, to a certain extent, empirical in character and are therefore open to criticism. In order to obviate as much of this criticism as possible, the specialists in each department were asked to estab-

TABLE 5.—*Incapacitation at Time of Operation*

	Number	Per Cent
No incapacitation	65	22
Slight incapacitation	16	5
Moderate incapacitation	50	17
Marked incapacitation	50	17
Complete incapacitation	118	39
Total cases	299	

TABLE 6.—*Funduscopic Observations at Time of Operation*

	Number	Per Cent
Normal fundi	12	3
Abnormal fundi	333	97
(a) Abnormal vessels only	144	41
(b) Abnormal vessels plus hemorrhages and exudates	95	29
(c) Papilledema	94	27
Total cases	345	

7. Braden, Spencer, and Kahn, E. A.: The Surgical Treatment of Hypertension: A Preliminary Report of Method of Study and Results in 264 Cases, Yale J. Biol. & Med. **11**: 449-458 (May) 1939.

lish their own criteria of normality and significant change. These criteria are as follows:

Significant reduction in blood pressure is considered as a drop of 40 mm. systolic and 15 mm. diastolic or more from the preoperative level. The blood pressure value given for each postoperative check-up is the arithmetical average of all readings by the departments of medicine and neurosurgery. No pressure is considered significantly reduced unless both the systolic and diastolic values are lowered.

Marked reduction in blood pressure is considered as a drop of 80 mm. systolic and 25 mm. diastolic, or more.

Reduction of blood pressure to normal is considered as a drop to, or lower than, 130 mm. systolic and 90 mm. diastolic for patients up to the age of 40. After the age of 40 the drop must be to, or lower than, 150 mm. systolic and 100 mm. diastolic.

Changes in ocular fundi are evaluated by the department of ophthalmology. Improvement of the pathologic vessel changes, in the number of hemorrhages and exudates, of angiospasm and of papilledema is noted only when the change is beyond dispute. All fundi with equivocal changes are regarded as unchanged. Cases in which papilledema disappeared after operation have been given special attention. In addition the Keith-Wagener-Craig classification is used.

Urine concentration is regarded as normal if the patient is able to concentrate to a specific gravity of 1.029 or higher after thirty-eight hours without water, on a dry diet. During the past year, because of inconvenience of this test to the patient, a short concentration test has been substituted in which the normal value is considered to be 1.026 following eighteen hours without food or fluids. In both tests a change in specific gravity of three points or more is deemed necessary in order to be considered significant.

Urea clearance is considered normal if the values of the test averaged 75 per cent or higher. A change of 15 per cent is considered significant.

Cardiac size is determined by the teleoroentgenogram. Fifteen per cent above the predicted normal cardiac area is taken as evidence of enlargement. A change of 10 per cent or more is considered significant. All teleoroentgenographic measurements have been checked by orthodiagram.

TABLE 7.—*Keith-Wagener-Craig Classification Funduscopic Observations at Time of Operation*

	Number	Per Cent
Normal fundi	12	3
Group 1	15	4
Group 2	77	23
Group 3	147	43
Group 4	94	27
Total cases	345	

TABLE 8.—*Cardiac Status at Time of Operation*

	Number	Per Cent
A. Electrocardiographic Observations		
Normal electrocardiogram	85	38
Abnormal electrocardiogram	137	62
Total cases	222	
B. Teleoroentgenographic Observations		
Normal cardiac size (average: +5%)	110	51
Cardiac enlargement (average: +35%)	105	49
Total cases	215	

Electrocardiograms are evaluated by the cardiologists on the degree of axis deviation and T wave changes. Each postoperative reading has been compared with the one taken preoperatively.

Symptomatology is, by necessity, evaluated from the patient's own statement. An attempt is always made to have all information as to changes in symptoms offered voluntarily by the patient.

Incapacitation is judged on the basis of the amount of work the patient was able to do immediately prior to operation as compared with his working ability before the onset of any incapacitation. Postoperative changes are judged on a similar basis.

In each instance the evaluation in every phase of the investigation has been made with the cooperation of the respective participating specialist. This approach has seemed, as nearly as possible, to avoid all individual prejudice. In the data presented it will be noted that in certain phases the proportion of cases without pertinent information may seem high. The primary reason is that whenever it has seemed apparent that the available data were incomplete or possibly inaccurate they have been deleted, even though such data indicated favorable results.

PREOPERATIVE STATISTICS

The 350 patients included in this study were operated on consecutively from November 1938 to September 1939. The technic of operation as described was used exclusively, and the operation was performed in each case by the same surgeon (M. M. P.). In tables 1 to 9 the preoperative observations are presented and discussed.

Approximately an equal percentage of males and females were operated on (table 1).

Ninety-three per cent of the patients were 30 years of age or older, with 50 per cent in the fifth decade (table 2).

TABLE 9.—*Renal Function at Time of Operation*

	Number	Per Cent
A. Urine Concentration		
Normal urine concentration (Average: 1.032)	55	16
Decreased urine concentration (Average: none obtained *)	279	84
Total cases	334	
B. Urea Clearance		
Normal urea clearance (Average: 95%)	191	56
Decreased urea clearance (Average: 51%)	148	44
Total cases	339	

* See under "Criteria."

TABLE 10.—*Postoperative Study*

Total patients operated on from 1933 to September 1939	350
Total cases studied in one or more phases postoperatively	346
Total cases with insufficient data in any postoperative phase	4
Total deaths	107
Operative deaths	12
Subsequent deaths	95
(a) Due directly to hypertension	77
(b) Due to other causes	5
(c) No data	13
Operative mortality	(3.4%)

The blood pressure levels indicate a marked degree of hypertension in these patients. The average level is 218/133. Sixty-five per cent have systolic pressures above 210 mm. and 77 per cent have diastolic pressures above 125 mm. (table 3). These figures become even more significant when it is realized that these pressures were usually taken in the hospital with the patient on

bed rest and, commonly, following strict medical treatment over an extended period of time.

In the majority of cases the symptoms present (table 4) were severe. In the order of frequency they were occipital headache, headache elsewhere, increased nervousness and irritability, ease of fatigue, urinary frequency and nocturia, dizziness, dulness of mental processes, dyspnea, blurring of vision, nausea and vomiting, hemiplegia.

Exact information as to incapacitation (table 5) was available in 299 cases. It is significant that in 56 per cent of the cases studied incapacitation was either complete or marked, another indication that the hypertension level of the group was high.

Exact information as to the preoperative condition of the fundi (table 6) was not available in only five cases. It is significant that the hypertension was of severity sufficient to cause fundus changes in 97 per cent of the cases and that of these 56 per cent showed hemorrhages and exudates or papilledema.

Exact information as to funduscopic examination (table 7) was not available in five cases. It is significant that 70 per cent of the cases studied were in groups 3 and 4, i. e. showed, according to the authors of the classification, a marked severity of the hypertensive process and a very poor prognosis.

TABLE 11.—*Distribution of Follow-Up Studies of 350 Cases According to Operative Year*

Year of Operation	Number of Patients	Dead Before 9 Mos.	Cases Studied 9 Mos. or More Postoperatively (Including Deaths After 9 Mos.)	Cases with No Data in Any Phase (Including Deaths After 9 Mos.)
1933	1	..	1	..
1934	32	8	24	..
1935	62	7	54	1
1936	59	11	46	2
1937	93	10	83	..
1938	59	4	55	..
1939	44	4	39	1
Totals	350	44	302	4

Acceptable data were obtained on electrocardiographic examination in 222 cases, and on teleoroentgenographic measurement in 215 cases (table 8). Cardiac damage was indicated in about 60 per cent of the cases and enlargement in nearly 58 per cent. It is significant that the average percentage of enlargement above predicted normal was 35.

Exact information on urine concentration (table 9) was not available in sixteen cases and on urea clearance in eleven cases. Renal damage, as measured by urine concentration, occurred in 84 per cent of the cases, the extent indicated by the low average figure of 1.023.

Urea clearance was diminished in only 44 per cent. In these cases, however, the average value of 51 per cent indicates that the damage to the kidneys was fairly severe.

In summary of the preoperative observations in 350 cases it can be said that the hypertension (averaging 218/133) of the whole group was high. This fact is confirmed by the high percentage of severe ocular fundus changes (70 per cent in Keith-Wagoner-Craig groups 3 and 4) and of renal and cardiac damage. Almost all the patients (98 per cent) had symptoms sufficiently severe to cause complaint. In 39 per cent incapacitation was complete.

POSTOPERATIVE STATISTICS

Of the 350 patients operated on for hypertension approximately 65 per cent have been reexamined postoperatively in the clinics of the University Hospital and 34 per cent have had acceptable data forwarded by their local physician or hospital. Only four patients (1 per cent) have not presented information in at least one phase.

The data collected cover a time period of approximately seven years. No case has been included that has not had at least a nine months postoperative period.

TABLE 12.—*Blood Pressure*

	Number	Per Cent
Cases studied 9 months or later postoperatively (including deaths)	290	100
Reduced (more than 40 mm. systolic and 15 mm. diastolic)	149	51.4
Unchanged	134	46.2
Increased (more than 10 mm. systolic and 5 mm. diastolic)	7	2.4
Cases with no data or dead before 9 months postoperatively	60	

If the sixty patients concerning whom no data were obtained or who died before nine months are considered as unchanged or worse, the percentage of patients with significantly reduced blood pressure in the whole group of 350 cases becomes 42.6.

This was deemed necessary to obviate the criticism that improvement was only temporary following a major operative procedure. The majority of patients have been reexamined more than once, and frequently at yearly postoperative intervals.

In evaluating the results of the operation those patients who have died subsequent to nine months after operation (obviously the poorest results) have been included in the complications.

Statistics are presented for each separate phase of the postoperative examination. Each phase is dealt with by two methods: first, a summary is given of the best results recorded at any one examination made nine months or more after operation, regardless of the exact postoperative interval; second, a table is presented which demonstrates the results by postoperative years.

No selection of cases was made. All who were able to return did so. More difficulty was encountered in getting the well patient who was working full time, and who had no complaints, to return than the sick patient, who was more than willing to take advantage of the opportunity of the gratis examination.

TABLE 13.—*Analysis of Patients with Significantly Reduced Blood Pressure*

	Number	Per Cent
Number of cases studied	149	100
Reduced to normal (130/90 for ages 20 to 40) (150/100 for ages 40 to 70)	56	37.5
Markedly reduced (but not to normal) (More than 80 mm. systolic and 25 mm. diastolic)	15	10.1
Reduced (but not markedly or to normal) (More than 40 mm. systolic and 15 mm. diastolic)	78	52.4

Thus, of those cases in which there was significantly reduced blood pressure 47.6 per cent were reduced to normal, markedly reduced or both.

All except 1 per cent of the cases have been studied in one or more phases postoperatively (table 10). The operative mortality was 3.4 per cent. Further statistical study of the deaths appears in a separate section later.

CLINICAL RESULTS OF SPLANCHNICECTOMY

No cases have been included (table 11) that have not been studied nine months or more from the time of operation. It is seen that seventy-eight cases have been studied more than five years and 196 cases for more than three years. With this wide spread of postoperative information it will be possible to show that the effects of the operation are not temporary.

Only 2.4 per cent of the 290 cases in which reliable postoperative information was obtained (table 12) showed a steady increase in blood pressure. It is obvious, therefore, that the majority of those patients who subsequently died had, at least at one examination, a blood pressure that was either improved or unchanged; otherwise the percentage would be much higher. It is only fair, however, to assume that the forty-four patients who died before nine months had no decrease in blood pressure. To be absolutely fair the sixteen patients on whom no data were obtained are also considered to be worse, although they undoubtedly were distributed in the same fashion as the others. Thus the absolute minimum of cases showing a significant reduction in blood pressure becomes, as noted, 42.6 per cent. Table 12 offers no information as to what period after nine months postoperatively the reduction occurred or whether it was maintained.

period of time without relief of either symptoms or high blood pressure. The operation was, then, a court of last appeal.

Table 14 is a demonstration of maintenance of the results of splanchnicectomy over a period of years. A sufficient number of the patients operated on were able to return for one or more check-up examinations through the years to show that reduction in blood pressure, once attained, persists. It is of equal importance to note that there was no significant increase in the percentage of patients in whom the blood pressure grew worse. It should be remembered that these statistics include check-up examinations of patients who subsequently died.

It may be assumed that if a patient had a significantly reduced blood pressure at, for example, the fifth year check-up the reduction had been maintained over that period. It is seen, as in the summary of check-up

TABLE 14.—*Blood Pressure per Postoperative Year and Analysis of Patients with Significantly Reduced Blood Pressure per Postoperative Year*

	First Year (9 to 18 Mos.)	Second Year (18 to 30 Mos.)	Third Year (30 to 42 Mos.)	Fourth Year (42 to 54 Mos.)	Fifth Year (54 to 66 Mos.)	Sixth Year (66 to 78 Mos.)	Seventh Year (78 to 90 Mos.)
Total patients studied (including deaths after 9 mos.).....	202	135	105	48	37	7	1
Blood pressure increased.....	3%	4%	4%	6%	5%	....	....
Blood presure unchanged.....	53%	50%	46%	38%	49%	57%	....
Blood pressure reduced.....	44%	46%	50%	56%	46%	43%	100%
Analysis of reduced blood pressures.....	89	62	51	27	17	3	1
Reduced to normal..... (130/90 for ages 20 to 40; 150/100 for ages 40 to 70)	19%	34%	40%	26%	24%	33%	....
Markedly reduced ..... (80 mm. systolic and 25 mm. diastolic, but not to normal)	20%	16%	18%	7%	24%	33%	100%
Reduced ..... (40 mm. systolic and 15 mm. diastolic, but not markedly or to normal)	61%	50%	42%	67%	52%	33%	....

The arbitrarily chosen criteria (table 13) for "normal," "markedly reduced" and "reduced" blood pressures are obviously open to criticism. They were established only after much discussion and collaboration with well qualified observers in the field of hypertension, and then only for the purpose of simplifying the data. It is felt, however, that since the postoperative pressures were all taken with the patients ambulatory and under a considerable mental and physical strain, as compared to the preoperative readings when the patients had usually been on bed rest, the reductions are of true significance. Thus, as already noted, nearly 50 per cent of the patients who had reduced blood pressures showed a drop to normal, a marked reduction or both.

TABLE 15.—*Age Distribution Correlated with Postoperative Blood Pressures*

Number of cases studied 9 months or more postoperatively (including deaths) 290

Age at Time of Operation	Total Cases Studied	Reduced	Unchanged	Increased
10 to 19 years.....	1	1 (100%)		
20 to 29 years.....	18	14 (78%)	4 (22%)	
30 to 39 years.....	74	38 (51.4%)	35 (47.3%)	1 (1.3%)
40 to 49 years.....	150	74 (49.3%)	71 (47.3%)	5 (3.3%)
50 to 59 years.....	46	22 (48%)	23 (50%)	1 (2%)
60 years plus.....	1	.....	1 (100%)	
Totals.....	290	149 (51.4%)	134 (46.2%)	7 (2.4%)

No other form of therapy as yet reported has shown as great a percentage of cases in which the blood pressure has been reduced to this extent.

This fact becomes even more significant when it is realized that the majority of these patients had been thoroughly treated by medical means over an extended

examinations showing the best results (tables 12 and 13), approximately 50 per cent of the patients show a reduction in blood pressure no matter whether the postoperative period was one or five years. Obviously the total number studied yearly reduces as the number operated on that number of years ago grows smaller.

TABLE 16.—*Eyeground Changes*

Total patients studied preoperatively and postoperatively..... 219

Preoperative Status		Postoperative Result: Improved	Unchanged	Worse
Normal eyegrounds.....	10	.....	10 (100%)	.....
Abnormal eyegrounds.....	209			
(a) Abnormal vessels only.....	102	50 (49%)	44 (43%)	8 (8%)
(b) Abnormal vessels plus hemorrhages and exudates.....	65	57 (88%)	6 (9%)	2 (3%)
(c) Papilledema.....	42	38 (91%)	4 (9%)	
		7 (17%) diminished		
		31 (74%) absent		

In analyzing those patients with reduced pressures it becomes clear that the degree of reduction, i. e. markedly reduced, reduced to normal or both, is also maintained throughout the postoperative years.

In table 15 the remarkable consistency of the percentage distributions is seen again. Surprisingly enough there is little evidence that older patients have a poorer prognosis as to the result of splanchnicectomy than do relatively younger patients. The best prognosis for reduction in blood pressure is in the age group from 10 to 29 years (78 per cent). After this age no significant difference is seen in the percentage with reduced pressure (always in the neighborhood of 50 per cent of the cases studied).

Table 16 indicates in each case studied nine months or more postoperatively the most favorable effect of the operation on the fundus oculi at any one examination.

It is significant that only ten patients of the 219 with funduscopic examinations both preoperatively and postoperatively showed a steady progression of the damage to the fundi, whereas 145 patients showed definite improvement regardless of the degree of damage before operation.

One of the most remarkable results of the operation occurred in the forty-two cases in which papilledema was present on preoperative examination. Of these patients thirty-one, or 74 per cent, showed complete disappearance of the edema on one or more postoperative examinations. Seventeen per cent showed diminution in the edema, 9 per cent remained unchanged and none grew steadily worse. Again it must be remembered that patients who subsequently died were included in these statistics.

65 to 100 per cent. In other words, the disappearance of the edema, when it occurred, was not a temporary effect since the percentage was approximately the same no matter what year the patient returned for his reexamination.

Of the 219 patients studied (table 18) both preoperatively and postoperatively (nine months or more after operation) only ten patients, or 4 per cent, had normal fundi preoperatively, and only sixty-three patients, or 29 per cent, showed the milder changes of groups 1 and 2.

The greatest number (147, or 67 per cent) had the advanced changes of groups 3 and 4, i. e. angiospasm or papilledema or both. Yet it was in the latter groups that the greatest improvement occurred as the result of operation. Thus 80 per cent of those who had group 3 preoperatively showed improvement on at least one examination postoperatively and, as shown in table 16, 91 per cent of group 4 showed improvement. Again it

TABLE 17.—*Fundus Changes per Postoperative Year*

	First Year (9 to 18 Mos.)	Second Year (18 to 30 Mos.)	Third Year (30 to 42 Mos.)	Fourth Year (42 to 54 Mos.)	Fifth Year (54 to 66 Mos.)	Sixth Year (66 to 78 Mos.)	Seventh Year (78 to 90 Mos.)
Total patients studied (including deaths after 9 mos.)	136	94	72	38	23	6	1
Abnormal preoperatively							
Abnormal vessels only preoperatively	65	46	41	22	13	2	....
Postoperatively partially improved	43%	43%	51%	41%	61%	....	....
Postoperatively unchanged	48%	48%	46%	45%	31%	100%	....
Postoperatively worse	9%	9%	3%	14%	8%	....	....
Abnormal vessels plus hemorrhages and exudates preoperatively	37	30	16	7	5	2	....
Postoperatively partially improved	86%	80%	87.5%	71%	80%	50%	....
Postoperatively unchanged	14%	13%	12.5%	29%	....	....	....
Postoperatively worse	....	7%	....	....	20%	50%	....
Papilledema	26	14	13	7	5	2	1
Postoperatively absent	73%	65%	85%	100%	100%	100%	100%
Postoperatively partially improved	12%	28%	15%	....	....	....	....
Postoperatively unchanged	15%	7%	....	....	....	....	....
Postoperatively worse	....	....	....	....	....	....	....
Normal preoperatively	8	4	2	2	....	....	....
Postoperatively continues normal	100%	75%	100%	100%	....	....	....
Postoperatively worse	....	25%	....	....	....	....	....

Criticism could be made of the results recorded in table 16 on the ground that the results were only temporary and were not maintained. The table makes such criticism untenable, since it can be seen that the percentages, whether indicating good or bad results, remain relatively the same throughout the postoperative years.

TABLE 18.—*Eyegrounds (Keith-Wagener-Craig Classification)*

Total patients studied preoperatively and postoperatively..... 219

Preoperative Status		Postoperative Status		
		Improved	Unchanged	Worse
Abnormal eyegrounds	209			
Group 1	13	1 (7%)	10 (78%)	2 (15%)
Group 2	50	22 (44%)	25 (50%)	3 (6%)
Group 3	105	84 (80%)	15 (15%)	5 (5%)
Group 4	42	7 (17%)	4 (9%)	
		(absent) 31 (74%)		
Normal eyegrounds	10	.....	10 (100%)	

Thus, about 45 per cent of the patients who had abnormal vessels only, i. e. showed sclerosis or angiospasm or both, maintained partial improvement throughout. Similarly, approximately 80 per cent of those with abnormal vessels, hemorrhages and exudates demonstrated a maintenance of improvement.

It is significant that the percentage of patients who had complete disappearance of papilledema following operation ranged through the postoperative years from

should be noted that of the latter group 74 per cent had complete disappearance of their papilledema at one or more examinations.

In a subsequent paper, now being prepared, it will be shown that the prognosis following splanchnicectomy for patients of groups 3 and 4 is far better than that given by the authors of this classification for the same groups treated only by medical means.

Once again (table 19), as in table 17, it is seen that improvement in eyegrounds is not a temporary effect of splanchnicectomy but rather that the percentages remain remarkably constant no matter what the year of check-up. Also it is again demonstrated that the greatest percentage of improvement occurs in those with the most serious damage to the fundi—i. e. in groups 3 and 4, and that this improvement is maintained proportionally throughout the years. It should be kept in mind that these statistics include, as has already been pointed out, the postoperative examinations of those patients who subsequently died; in other words, the cases with the poorest results.

The average heart size of the 105 patients (table 21) before operation was + 18 per cent. Following operation, on at least one examination nine months or more postoperatively, the average heart size was reduced to 8.9 per cent.

It is significant that of the fifty patients who had hearts enlarged before operation 50 per cent returned to normal postoperatively and 14 per cent were partially improved. Only 4 per cent grew steadily worse.

Ninety-three per cent of the patients with normal heart size preoperatively remained within normal limits postoperatively.

preoperatively had an abnormal recording postoperatively.

The significant finding is that only five cases out of 127 demonstrated steadily increasing cardiac damage as measured by electrocardiogram.

The arrest in cardiac damage as measured by the electrocardiogram (table 23) was not a temporary effect

TABLE 19.—*Fundus Changes per Postoperative Year (Keith-Wagener-Craig Classification)*

	First Year (9 to 18 Mos.)	Second Year (18 to 30 Mos.)	Third Year (30 to 42 Mos.)	Fourth Year (42 to 54 Mos.)	Fifth Year (54 to 66 Mos.)	Sixth Year (66 to 78 Mos.)	Seventh Year (78 to 90 Mos.)
Total patients studied	136	94	72	38	23	6	1
Abnormal preoperatively							
Group 1	8	5	4	2	4	1	....
Postoperatively partially improved	1 (12.5%)	.....	1 (25%)	.....	1 (25%)	.....	....
Postoperatively unchanged	5 (62.5%)	5 (100%)	3 (75%)	2 (100%)	2 (50%)	1 (100%)	....
Postoperatively worse	2 (25%)	.....	.....	.....	1 (25%)	.....	....
Group 2	33	26	13	8	1	....	....
Postoperatively partially improved	13 (39%)	10 (38%)	4 (31%)	1 (12.5%)	1 (100%)	....	....
Postoperatively unchanged	19 (58%)	13 (50%)	8 (61%)	5 (62.5%)	....	....	....
Postoperatively worse	1 (3%)	3 (12%)	1 (8%)	2 (25%)	....	....	....
Group 3	61	45	40	19	13	3	....
Postoperatively partially improved	45 (74%)	30 (67%)	30 (75%)	14 (74%)	10 (77%)	1 (33.3%)	....
Postoperatively unchanged	14 (23%)	12 (27%)	9 (22.5%)	3 (16%)	1 (8%)	1 (33.3%)	....
Postoperatively worse	2 (3%)	3 (6%)	1 (2.5%)	2 (10%)	2 (15%)	1 (33.3%)	....
Group 4	26	14	13	7	5	2	1
Postoperatively papilledema absent	19 (73%)	9 (65%)	11 (85%)	7 (100%)	5 (100%)	2 (100%)	1 (100%)
Postoperatively papilledema partially improved	3 (12%)	4 (28%)	2 (15%)	....	....	....	....
Postoperatively papilledema unchanged	4 (15%)	1 (7%)	....	....	....	....	....
Normal preoperatively	8	4	2	2	....	....	....
Postoperatively continues normal	8 (100%)	3 (75%)	2 (100%)	2 (100%)	....	....	....
Postoperatively worse	.....	1 (25%)	....	....	....	....	...

TABLE 20.—*Heart Size per Postoperative Year*

	First Year (9 to 18 Mos.)	Second Year (18 to 30 Mos.)	Third Year (30 to 42 Mos.)	Fourth Year (42 to 54 Mos.)	Fifth Year (54 to 66 Mos.)	Sixth Year (66 to 78 Mos.)	Seventh Year (78 to 90 Mos.)
Total patients studied (including deaths after 9 mos.)	65	43	30	12	8	2	....
Heart enlarged preoperatively	30	24	13	8	6	1	....
Postoperatively normal	53%	29%	39%	50%	17%	100%	....
Postoperatively improved	7%	38%	15%	....	33%	....	....
Postoperatively unchanged	37%	29%	46%	50%	50%	....	....
Postoperatively further enlarged	3%	4%	....	....	....	....	....
Heart normal size preoperatively	35	19	17	4	2	1	....
Postoperatively continues normal	94%	95%	82%	100%	100%	100%	....
Postoperatively enlarged	6%	5%	8%	....	....	....	....

Diminution in heart size postoperatively was not a temporary effect of splanchnicectomy (table 20). Thus there is relatively constant distribution of the percentages no matter at what postoperative period the check-up examination was made.

Of seventy-three patients who had abnormal electrocardiograms before operation (table 22) 29 per cent

TABLE 21.—*Heart Size (Measured by Teleoroentgenogram and Expressed in Percentage Above Predicted Normal Area)*

Total patients studied preoperatively and postoperatively..... 105

Preoperative Status (Average Size: +18%)	Postoperative Result (Average Size: +8.9%) Normal	Partially Improved*	Unchanged	Further Enlarged
Heart enlarged preoperatively, 50 cases (15% above predicted normal area)	50%	14%	32%	4%
Heart size normal preoperatively, 55 cases	....	....	93%	7%

* A change of 10 per cent is considered significant.

became normal, 25 per cent were partially improved and 41 per cent remained unchanged. Only one patient out of fifty-four having a normal electrocardiogram

of splanchnicectomy. The percentages of the patients at each yearly check-up are relatively constant no matter the postoperative time interval. The marked increase

TABLE 22.—*Electrocardiogram*

Total patients studied preoperatively and postoperatively..... 127

Preoperative Status	Postoperative Result Normal	Partially Improved	Unchanged	Worse
Electrocardiogram				
Abnormal, 73 cases	21 (29%)	18 (25%)	30 (41%)	4 (5%)
Normal, 54 cases	.....	.....	53 (98%)	1 (2%)

at the sixth year check-up is probably apparent (only three cases studied) rather than real.

Urea clearance determinations were made in 189 cases (table 25) before operation and at least once nine months or more postoperatively. Only 7 per cent of those with preoperatively abnormal values and 13 per cent of those with preoperatively normal values showed a steady decrease in renal function postoperatively. It is of importance to note that 51 per cent of the sixty-

nine cases showing decreased renal function before operation returned to normal or were partially improved postoperatively.

Table 24 would indicate that improvement in renal function as measured by urea clearance is not a temporary result of splanchnicectomy but persists in an almost constant percentage of cases over a long postoperative period. Similarly the percentages of those whose renal function grew worse following operation also remains nearly constant instead of increasing through the years as would be expected had the patients not been operated on.

Urine concentration tests were made in 208 cases (table 26) both preoperatively and postoperatively (at least once nine months or more after operation). Of those who had decreased concentrating ability, 27 per cent returned to normal after operation and an additional 17 per cent were partially improved, making a total of 44 per cent improved.

It should be explained that the concentration test was shortened to eighteen hours during the last year of the study. It seems probable that the higher percentage of patients failing to show improvement in this phase is due to the fact that the results on this shorter test are not exactly comparable with those on the longer test.

Improvement in renal function as indicated by urine concentration tests is maintained (table 27). This is demonstrated by the consistency of the percentages showing improvement or return to normal throughout the postoperative years. Poorest results are seen in those patients who had normal concentrating ability preoperatively.

Of 284 patients 277 (98 per cent) complained of symptoms due to hypertension. Of these 86 per cent stated, on at least one examination nine months or more postoperatively, that their symptoms had either completley disappeared or were improved. Only 3 per cent were worse. Of the seven patients who had no symptoms before operation only one developed persistent symptoms. Deducting a possible psychotherapeutic effect, it still remains obvious that the majority of patients benefited markedly from the operation.

TABLE 23.—*Electrocardiogram per Postoperative Year*

	First Year (9 to 18 Mos.)	Second Year (18 to 30 Mos.)	Third Year (30 to 42 Mos.)	Fourth Year (42 to 54 Mos.)	Fifth Year (54 to 66 Mos.)	Sixth Year (66 to 78 Mos.)	Seventh Year (78 to 90 Mos.)
Total patients studied (including deaths after 9 mos.)	73	49	37	15	10	5	....
Electrocardiogram abnormal preoperatively	37	30	17	10	7	3	....
Postoperatively normal	24%	23%	35%	40%	43%	33.3%	....
Postoperatively partially improved	33%	17%	23%	10%	14%	....	....
Postoperatively unchanged	38%	53%	30%	40%	29%	33.3%	....
Postoperatively worse	5%	7%	12%	10%	14%	33.3%	....
Electrocardiogram normal preoperatively	36	19	20	5	3	2	....
Postoperatively continues normal	97%	100%	100%	100%	100%	100%	....
Postoperatively abnormal	3%	....	....	....	....	....	....

TABLE 24.—*Urea Clearance per Postoperative Year*

	First Year (9 to 18 Mos.)	Second Year (18 to 30 Mos.)	Third Year (30 to 42 Mos.)	Fourth Year (42 to 54 Mos.)	Fifth Year (54 to 66 Mos.)	Sixth Year (66 to 78 Mos.)	Seventh Year (78 to 90 Mos.)
Total patients studied (including deaths after 9 mos.)	116	87	58	31	22	6	1
Abnormal preoperatively	52	31	17	11	7	2	....
Postoperatively normal	39%	48%	53%	64%	43%	50%	....
Postoperatively improved	4%	6%	....	....	14%	....	....
Postoperatively unchanged	42%	36%	47%	18%	43%	50%	....
Postoperatively worse	15%	10%	....	18%	....	....	....
Normal preoperatively	64	56	41	20	15	4	1
Postoperatively continues normal	78%	79%	78%	70%	87%	75%	100%
Postoperatively abnormal	22%	21%	22%	30%	13%	25%	....

TABLE 25.—*Renal Function*

Urea Clearance				
Total patients studied preoperatively and postoperatively	181			
	Postoperative Result			
Preoperative Status	Normal	Partially Improved	Unchanged	Worse
Decreased (below 75%) 69 cases	31 (45%)	4 (6%)	29 (42%)	5 (7%)
Normal (75% or above) 112 cases	.....	.....	97 (87%)	15 (13%)

Complete or partial relief of the symptoms was maintained, as shown by the relative consistency of the percentages over a long period of time (table 28). It is important to note the low percentages of those who remained unchanged or who grew worse.

TABLE 26.—*Renal Function*

Urine Concentration				
Total patients studied preoperatively and postoperatively	208			
	Postoperative Result			
Preoperative Status	Normal	Partially Improved	Unchanged	Worse
Decreased, 172 cases (Long test: below 1.029) (Short test: below 1.026)	47 (27%)	30 (17%)	70 (41%)	25 (15%)
Normal, 36 cases (Long test: 1.029 plus) (Short test: 1.026 plus)	.....	.....	23 (64%)	13 (36%)

It is obvious from these large percentages showing complete relief or partial improvement that many of the patients did not have a corresponding diminution in blood pressure. Many of the patients had blood pressures unchanged by operation. To them, however, the relief of symptoms, usually headache, was of vital importance. The answer to this apparent paradox is not

available at present. Research is being carried on by one of us (W. W. W.) relative to the physiology of cerebrospinal fluid pressure relationships in an attempt to explain why, following operation, so many patients receive persistent symptomatic relief from their headaches even though their blood pressure continues unchanged or goes even higher.

The statistics in table 30 indicate one of the most important results of splanchnicectomy. To the patient who must earn his living the ability to return to gainful occupation is of primary importance. Thus, of eighty-four patients who were completely incapacitated before operation 51 per cent had returned to full-time work at the time of at least one examination nine months or more postoperatively; 23 per cent had returned to part-time occupation.

percentages are significantly greater than could be expected for patients treated by medical means alone. They become even more significant when the preoperative observations presented in tables 1 to 10 are reviewed, indicating the marked degree of hypertension and the extensive systemic damage present in the majority of these patients before operation.

Wagener and Keith in a recent review of 219 cases of hypertension treated by medical means alone found a survival of only 9 per cent after five to nine years. In our series approximately 50 per cent have survived five years or longer. A paper is now being prepared which will show that the degree of hypertension in our cases as indicated by funduscopic examination was of comparable severity to that of the cases collected by these authors.

TABLE 27.—*Urine Concentration per Postoperative Year*

	First Year (9 to 18 Mos.)	Second Year (18 to 30 Mos.)	Third Year (30 to 42 Mos.)	Fourth Year (42 to 54 Mos.)	Fifth Year (54 to 66 Mos.)	Sixth Year (66 to 78 Mos.)	Seventh Year (78 to 90 Mos.)
Total patients studied (including deaths after 9 mos.).....	121	95	72	35	25	7	1
Abnormal preoperatively	96	81	61	30	20	6	1
Normal postoperatively	23%	24%	21%	23%	5%	17%	....
Improved postoperatively	16%	24%	18%	17%	25%	50%	100%
Unchanged postoperatively	50%	40%	40%	40%	60%	33%	....
Worse postoperatively	11%	12%	21%	20%	10%	....	....
Normal Preoperatively	25	14	11	5	5	1	....
Continues normal postoperatively.....	64%	57%	36%	20%	40%	....	....
Abnormal postoperatively	36%	43%	64%	80%	60%	100%	....

TABLE 28.—*Symptomatology per Postoperative Year*

	First Year (9 to 18 Mos.)	Second Year (18 to 30 Mos.)	Third Year (30 to 42 Mos.)	Fourth Year (42 to 54 Mos.)	Fifth Year (54 to 66 Mos.)	Sixth Year (66 to 78 Mos.)	Seventh Year (78 to 90 Mos.)
Total patients studied (including deaths after 9 mos.).....	198	132	105	45	36	7	1
Symptoms present preoperatively.....	193	129	104	43	36	7	1
Postoperatively absent	25%	28%	41%	37%	53%	71%	100%
Postoperatively improved	63%	59%	47%	49%	33%	29%	....
Postoperatively unchanged	11.5%	9%	8%	9%	8%	....	....
Postoperatively worse	0.5%	4%	4%	5%	6%	....	....
Symptoms absent preoperatively.....	5	3	1	2	....	....	....
Postoperatively unchanged	100%	67%	100%	50%	....	....	....
Postoperatively present	....	33%	....	50%	....	....	....

Of even greater significance is the fact that only fifteen of the 244 patients having adequate data on this phase showed a steady increase in their incapacitation. By far the majority showed a complete absence or partial improvement of this symptom.

It is clearly demonstrated in table 31 from the consistently high percentages of those patients, preoperatively incapacitated, who were able, after operation, to carry on full-time work that the effects of splanchnicectomy are not temporary. Thus, for example, 62 per cent of the patients, previously incapacitated, who were studied five years after operation were back at full time

TABLE 29.—*Subjective Symptomatology*

Total patients studied preoperatively and postoperatively..... 284

Preoperative Status		Postoperative Result: Absent	Improved	Unchanged	Worse
Symptoms present....	277	109 (39%)	131 (47%)	30 (11%)	7 (3%)
Symptoms absent.....	7	.....	.....	6 (86%)	1 (14%)

work, and an additional 24 per cent were partially improved. The purely economic value of the operation to these patients was obviously very great.

The percentages of survivals according to year of operation are presented in table 32. We believe these

It should be noted, as stated in table 32, that operative deaths, deaths due to causes other than hypertension, and cases in which no data could be obtained are all calculated statistically to give the absolute minimal survival percentages.

TABLE 30.—*Incapacitation*

Total patients studied preoperatively and postoperatively..... 244

Preoperative Status		Postoperative Result: Incap. Absent	Partially Improved	Unchanged	Worse
Incapacitation present	182	101 (55%)	47 (26%)	29 (16%)	5 (3%)
Slight.....	16	10 (63%)	2 (12%)	4 (25%)	
Moderate.....	43	27 (63%)	11 (26%)	1 (2%)	4 (9%)
Marked.....	39	21 (54%)	11 (28%)	6 (15%)	1 (3%)
Complete.....	84	43 (51%)	23 (28%)	18 (21%)	
Incapacitation absent.	62	.....	.....	52 (84%)	10 (16%)

OPERATIVE AND POSTOPERATIVE DEATH STATISTICS

Out of the total number of 350 patients studied, on whom splanchnicectomy was performed, 107 patients died subsequently over a period of nearly seven years. Twelve of these were operative deaths, i. e. death occurred before they left the hospital. Seventy-seven are known to have died subsequently from a cause directly attributable to hypertension. Five are known

to have died from causes other than hypertension. Thirteen are known to be dead but the cause of death is unknown.

The operative mortality attendant on splanchnicectomy was 3.4 per cent. Of the twelve operative deaths ten patients were males and two females. One patient died on the operating table, probably of cerebral embolus. Four patients died immediately after operation (within eight hours), two of these of acute cardiac failure, one of cerebral hemorrhage and one of acute cerebral edema, of unknown etiology. The remaining seven patients died from one to twenty-five days after operation. Three of these died from cerebral hemorrhage, one from myocardial infarction (possibly occurring just before operation), one from pontile thrombosis, one from either coronary occlusion or pulmonary embolus, and one from lobular pneumonia with fibrinopurulent mediastinitis. It is interesting to note that only one patient died of thrombosis of the cerebral vessels, a contingency that would be expected to occur much more often, owing to the marked drop of blood pressure which occurs frequently during and immediately after operation.

The sex distribution of mortality is extremely interesting. Far more males died following operation than did females. Thus ten males had operative deaths and only two females. Subsequently sixty-four males died (39 per cent of the total males operated on) as against thirty-one females (17 per cent of the total females operated on).

Causes of death in the eighty-two cases with available data were thirty-one due to cerebrovascular accident, twenty-nine to cardiac failure, twenty-one to renal failure and five to causes other than hypertension. (Note: The discrepancy in the total number of cases is due to the fact that four cases were diagnosed as "cardiorenal failure" and hence were included in both categories.)

Data on subjective relief of symptoms were available for eighty-two patients of the total of ninety-five who died subsequent to operation. Following discharge from the hospital and up to the terminal illness, 11 per cent of these patients received complete relief from symptoms, 61 per cent received partial relief, 20 per cent were unchanged and only 6 per cent grew steadily worse. In other words 72 per cent of the patients received either complete or partial relief of their symptoms following operation regardless of the postoperative interval before death or the duration of their terminal illness.

Seventy-five patients died nine months or more following operation. Of these, prior to their terminal illnesses, 23 per cent had significant reduction in blood pressure on at least one examination, 2 per cent had reduction to normal, 63 per cent were unchanged and 12 per cent grew steadily worse.

It is of interest to note that the average postoperative survival period (exclusive of the operative deaths) was nineteen months.

TABLE 31.—*Incapacitation per Postoperative Year*

	First Year (9 to 18 Mos.)	Second Year (18 to 30 Mos.)	Third Year (30 to 42 Mos.)	Fourth Year (42 to 54 Mos.)	Fifth Year (54 to 66 Mos.)	Sixth Year (66 to 78 Mos.)	Seventh Year (78 to 90 Mos.)
Total patients studied (including deaths after 9 mos.).....	171	112	95	43	34	8	1
Incapacitation present preoperatively.....	134	86	81	36	29	8	1
Postoperatively absent	40%	59%	62%	56%	62%	87.5%	100%
Postoperatively partially improved	39%	20%	20%	30%	24%	....	....
Postoperatively unchanged	16%	12%	10%	14%	7%	12.5%	....
Postoperatively worse	5%	3%	2%	....	7%	....	....
Incapacitation absent preoperatively.....	37	26	14	7	5	....	....
Postoperatively continues absent	92%	81%	79%	86%	100%	....	....
Postoperatively present	8%	19%	21%	14%	....	....	....

TABLE 32.—*Survival*

Year of Operation	Patients Operated On	Years After Operation	Patients Living	Per Cent Living	No Data
1933.....	1	7	1	100	..
1934.....	32	6	13	40.6	..
1935.....	62	5	37	59.5	1
1936.....	59	4	31	54.2	1
1937.....	93	3	70	75.3	..
1938.....	59	2	50	84.7	..
1939 to September..	44	1	38	86.4	1
	350		250	77.7	3

These figures include twelve patients who died as the result of operation and at least five patients dead from causes other than hypertension. The three patients on whom no data were obtained are also calculated as dead.

SUMMARY

Three hundred and fifty consecutive cases of hypertension with operation by bilateral supradiaphragmatic splanchnicectomy and lower dorsal sympathetic ganglionectomy have been studied over a period of nearly seven years.

From table 33 it must be concluded that the operation of bilateral supradiaphragmatic splanchnicectomy and lower dorsal sympathetic ganglionectomy is of great value in the treatment of hypertension.

Of the patients studied 86.6 per cent had postoperative relief of major symptoms, especially headache, 81.3

TABLE 33.—*Summary of Results of Splanchnicectomy: Percentage of Cases Studied Showing Improvement (From Nine Months to Seven Years After Operation)* *

	Per Cent
Blood pressure	
Reduced to normal.....	11.7
Markedly reduced (but not to normal).....	7.6
Total cases significantly reduced.....	51.4
General disability	
Symptoms improved	86.6
Complete recovery incapacitation.....	55.5
Total cases with improvement incapacitation.....	81.3
Eyegrounds	
Disappearance of papilledema, when present.....	73.8
Total cases with improvement.....	69.4
Heart	
Heart size diminished.....	64
Electrocardiogram improved	53.4
Renal function	
Urea clearance improved.....	52.2
Urine concentration improved.....	44.8

* Statistics include those patients who showed improvement but who subsequently died.

per cent had improvement or complete relief of incapacitation and 51.4 per cent with adequate postoperative data had a significant reduction in blood pressure. Approximately one half of these patients had pressures reduced to normal or markedly reduced.

Improvement in ophthalmologic, cardiac and renal status following operation varied from 45 per cent to 70 per cent of the cases studied.

Prognosis is much more favorable in females than in males.

The most favorable results are obtained in the age group before 30. Following this period the age of the patient appears to be of minor importance as far as the result of operation is concerned.

Far advanced fundus changes, i. e. marked angiospasm and papilledema, are not contraindications to the operation.

The operative mortality is low (3.4 per cent) and no specific ill effects are attendant on the operation.

Finally, no other form of therapy, whether medical or surgical, has as yet been reported which offers as good results in patients suffering from hypertension of an equal degree of severity. Furthermore, these results are not temporary but continue over a period of years.

The conclusion is reached that the surgical treatment of hypertension by bilateral supradiaphragmatic splanchnicectomy and lower dorsal sympathetic ganglionectomy offers a better prognosis in cases of severe hypertension than any other form of therapy as yet reported.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

"TWIN CONTROL" HEAVY DUTY CAUTERY SET, "SINGLE CONTROL" CAUTERY SET AND "SIMPLIFIED CONTROL" CAUTERY SET ACCEPTABLE

Manufacturer: National Electric Instrument Company, Inc., 36-06 Forty-Second Avenue, Long Island City, N. Y.

The Cautery Sets submitted by the National Electric Instrument Company, Inc., consist of the following: "Single Control" Cautery Set designed to operate the lighter cautery tips manufactured by the firm (Nos. 1 to 7) and two larger units, the "Twin Contro!" Heavy Duty Cautery Set and the "Simplified Control" Cautery Set, designed to operate the heavier tips as well as the lighter ones.

"Simplified Control" Cautery Set.

According to information supplied by the firm, the heating elements of the cautery electrodes are made of "Nichrome" and are silver soldered into the shanks. Molded shank separators provide for insulation and rigidity.

The cautery pistol is molded of a boilable material known as "Neicomold" and a button momentary type of control switch, as well as a trigger lock for more lengthy cautery procedures. All internal contacts are of phosphor bronze and copper. The rubber-covered cautery pistol conductor cable is composed of two conductors of No. 13 copper, made up of 120 strands of No. 34 copper wire.

The transformers are of split primary windings. This construction is said to result in more efficient heat dissipation. The molded transformer housings provide efficient insulation and each of the terminals of the metal transformer is insulated from the metal panels by means of fiber or bakelite washers and bushings.

The Council's clinical investigation of the apparatus revealed that it gave satisfactory service. The cautery blades, which are of several sizes, can be heated from a dull red to almost white heat and retain this heat well when applied to the tissues; they do not cool down too rapidly to be effective. For cauterization within cavities, the instrument is accompanied by a light which is regulated from the instrument box itself.

The following results were obtained from physical tests performed in the Council's laboratory.

The "Twin Control" Heavy Duty Cautery Set was run for one hour, a No. 9 electrode and cautery light being used as load. The electrode was immersed in water to keep it from melting. The final temperature by the thermometer method was 95 C. and by the resistance method was 91.7 C. The input was 110 volts and 15 watts.

The "Single Control" Cautery Set was run for one-half hour, a No. 2 electrode immersed in water being used as a load. The final temperature by the thermometer method was 105 C. and by the resistance method 91.7 C. The input was 110 volts and 10 watts.

The Council voted to accept the "Twin Control" Heavy Duty Cautery Set, the "Single Control" Cautery Set and the "Simplified Control" Cautery Set for inclusion on its list of accepted devices.

MONTGOMERY WARD S-1 SUNLAMP ACCEPTABLE

Distributor: Montgomery Ward & Co., Chicago.

The Montgomery Ward S-1 Sunlamp, manufactured by the General Electric Company, produces ultraviolet radiation within the limits of the standards set by the Council for devices using the term "Sunlamp," which require that the energy of wavelengths shorter than and including 2,800 angstroms shall not exceed 1 per cent of the total energy of wavelengths between 2,804 and 3,132 angstroms. The wavelengths fall in the spectral region of low erythematogenic action and render the sunlamp suitable for unsupervised use by the layman.

Montgomery Ward S-1 Sunlamp.

The Mazda Sunlight Lamp Type S-1 is mounted in a reflector on an adjustable support and is a combination of tungsten electrodes in parallel with a tungsten filament. These are enclosed in a special glass bulb along with a little pool of mercury. The current first flows only through the filament but, as the temperature increases, the mercury vaporizes and an arc is formed between the ends of the tungsten electrodes. The process requires only a few seconds, although a few minutes is required for the lamp to begin radiating ultraviolet energy at its maximum efficiency. The mercury arc between the electrodes produces the major portion of the effective ultraviolet radiation. The result of the combination produces radiations in the visible and the infra-red as well as in the ultraviolet zones. The bulb is made of Pyrex glass, which absorbs most of the radiation in the ultraviolet region shorter than approximately 2,800 angstrom units.

The lamp operates only on alternating current; type S-1 requires an input of 450 watts. The lamp stands are equipped with special transformers in the base for the purpose of securing the proper voltage, since the S-1 bulbs do not fit in the ordinary lamp socket.

The Montgomery Ward S-1 Sunlamp generates 50 microwatts per square centimeter at a distance of 45 inches from the rim of the reflector. A minimum perceptible erythema may be produced at a distance of 45 inches in twenty minutes on the average untanned skin.

The Council voted to accept the Montgomery Ward S-1 Sunlamp for inclusion on its list of accepted devices.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT.

PAUL NICHOLAS LEECH, Secretary.

PURIFIED PROTEIN DERIVATIVE OF TUBERCULIN

Action on Name

Dr. Esmond R. Long inquired of the Council some time ago whether or not the name Purified Protein Derivative would be acceptable to the Council on Pharmacy and Chemistry as a designation for the purified protein principle of tuberculin. The Council voted that it would recognize the name Purified Protein Derivative of Tuberculin with the understanding that the initials P. P. D., which are widely used colloquially, will not be used in official designation of the product, as on packages or circulars.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

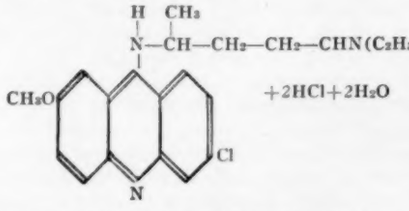
PAUL NICHOLAS LEECH, Secretary.

AMINOPHYLLINE (See New and Nonofficial Remedies, 1940, p. 555).

The following dosage forms have been accepted:

Tablets Aminophylline, 0.1 Gm. (1½ grains).
Prepared by Endo Products, Inc., Richmond Hill, N. Y.
Ampule Solution Aminophylline, 0.48 Gm., 2 cc.
Prepared by Endo Products, Inc., Richmond Hill, N. Y.
Ampule Solution Aminophylline, 0.24 Gm., 10 cc.
Prepared by Endo Products, Inc., Richmond Hill, N. Y.
Tablets Aminophyllin 0.1 Gm. (1½ grains).
Prepared by The Smith-Dorsey Company, Lincoln, Neb.

ATABRINE *di*-HYDROCHLORIDE.—Chinacrin Dihydrochloride.—The *di*-hydrochloride of 3-chloro-7-methoxy-9-(1 methyl-4-diethyl-amino)butylamino acridine.—



Actions and Uses.—Atabrine *di*-hydrochloride destroys the asexual forms of Plasmodium vivax and P. malariae, but the crescents of P. falciparum are more resistant. It does not induce hemolysis or cause damage to the liver or circulatory system when used therapeutically. It may cause epigastric distress and cramps, but it is of low toxicity when administered orally. The spleen of chronic malaria is not affected by atabrine *di*-hydrochloride but the acutely enlarged spleen yields, though more slowly, than to quinine. Its relative antimalarial value compared to that of quinine is much debated. It is claimed to act more rapidly and to require a shorter period of treatment. It does not induce symptoms of cinchonism, and it may be used during pregnancy. Its prophylactic value appears to be about equal to that of quinine. It is absorbed readily from the intestine and is excreted slowly in the urine and feces. While it is sometimes injected intramuscularly or even intravenously in cases of severe malarial infection when oral administration is not feasible, the intravenous injection is dangerous: the injections must be made very slowly. (See report of Field, J. W.; Niven, J. C., and Hodgkin, E. P.: Prevention of Malaria in Field by Use of Quinine and Atebrin (Atabrine); Experiments in Clinical Prophylaxis, Bull. Health Organ., League of Nations **6**:236 [April] 1937.)

Dosage.—Oral. Adults: 0.1 Gm. (1½ grains) three times daily for five days. Children of 1 to 4 years: 0.05 Gm. (¾ grain) twice daily for five days or once daily for eight days, crushed and suspended in honey or syrup. Children of 4 to 8 years: 0.1 Gm. (1½ grains) twice daily for five days or once daily for eight days. Children over 8 years: Dosage like that of adults.

Prophylactic Dose: Adults: 0.2 Gm. (3 grains) twice weekly, or 0.05 Gm. (¾ grain) daily. Children: 0.05 Gm. (¾ grain) every other day.

The technic of the intramuscular or intravenous administration must be learned before the method is used. Details will be found in the circulars of manufacturers and in various publications.

Manufactured by the Winthrop Chemical Company, Inc., New York. U. S. patent 2,113,357 (April 5, 1938; expires 1955). U. S. trademark 302,473.

Ampules Atabrine di-Hydrochloride Powder 0.2 Gm. with Ampules, 10 cc. size, Sterile Distilled Water.
Tablets Atabrine di-Hydrochloride (Sugar Coated) 0.1 Gm. (1½ grains).
Tablets Atabrine di-Hydrochloride 0.1 Gm. (1½ grains).
Tablets Atabrine di-Hydrochloride 0.05 Gm. (¾ grain).

Atabrine *di*-hydrochloride occurs as an odorless, orange-yellow, bitter tasting, crystalline powder, containing two molecules of water of crystallization; it melts with decomposition between 245 and 247 C. It is soluble in water and slightly soluble in acetone, ether and benzene. Aqueous solutions of atabrine *di*-hydrochloride are colored yellow and exhibit yellow-green fluorescence.

Dissolve about 25 mg. of atabrine *di*-hydrochloride in 2 cc. of sulfuric acid, cover the yellow solution obtained with 0.5 cc. of nitric acid: a dark red color develops in the zone of contact and, on shaking, the solution turns red with loss of fluorescence.

Dissolve 1 Gm. of atabrine *di*-hydrochloride in 50 cc. of water. To a 5 cc. portion add 1 cc. of dilute ammonia water: an oily, yellow precipitate results. Add 5 cc. of amyl alcohol to the mixture and shake the test tube: the amyl alcohol layer contains the free base, atabrine.

To the first of four separate 5 cc. portions of the solution add 1 cc. of mercury bichloride solution; to the second portion add 1 cc. of potassium iodide solution; to the third portion add 1 cc. of ammonium thiocyanate solution; and to the fourth portion add 1 cc. of potassium dichromate solution: a yellow precipitate is produced in each mixture. To another 5 cc. portion add 2 drops of nitric acid and 5 drops of silver nitrate solution: a white precipitate forms, soluble in excess ammonia water. To another 5 cc. portion add 1 cc. of barium chloride solution: no turbidity results.

The *p*H of a solution made by dissolving 1 Gm. of atabrine *di*-hydrochloride, accurately weighed, in boiled and cooled distilled water sufficient to make 100 cc. of solution is between 4.5 and 4.9 at 25 C.

Dry about 1 Gm. of atabrine *di*-hydrochloride, accurately weighed, to constant weight at 100 C.: the loss in weight should not be less than 5.5 per cent nor more than 7.5 per cent.

Incinerate 1 Gm. of atabrine *di*-hydrochloride: the ash is negligible.

Transfer 1 Gm. of atabrine *di*-hydrochloride, accurately weighed, to a 100 cc. calibrated flask and add 50 cc. of water. When the salt has dissolved, add slowly 4.5 cc. of normal sodium hydroxide solution, mix with swirling (avoid air bubble entrapment) and fill to the mark with water. Filter the solution into a dry 250 cc. beaker, and add about 0.3 Gm. of halogen-free decolorizing charcoal. Stir the mixture and allow it to stand for five minutes; then filter through a dry paper. Reject the first 25 cc. of the colorless filtrate, take 50 cc. of the remainder, and titrate as directed under volumetric method I in Official and Tentative Methods of Analysis of the Official Agricultural Chemists, edition 4, 1935, page 131. The calculated content of hydrochloric acid should not be less than 14.1 per cent nor more than 14.6 per cent.

Transfer about 0.25 Gm. of atabrine *di*-hydrochloride, accurately weighed, to a 100 cc. calibrated flask, add 10 cc. of water and 10 cc. of a solution made by dissolving 26 Gm. of sodium acetate and 26 cc. of 40 per cent acetic acid in sufficient water to make a total of 100 cc. To the solution in the calibrated flask add 50 cc. of tenth-normal potassium dichromate and water to the mark. Avoid air bubble entrapment. Mix thoroughly and filter the solution through a dry paper, rejecting the first 15 cc. of the filtrate. Transfer 50 cc. of the filtrate to a glass-stoppered Erlenmeyer flask, add 13 cc. of hydrochloric acid and 20 cc. of potassium iodide test solution. Stopper the flask and mix the contents by swirling gently. Allow the mixture to stand in the dark for two minutes and titrate the liberated iodine with tenth-normal sodium thiosulfate. Each cubic centimeter of tenth-normal potassium dichromate used is equivalent to 0.007881 Gm. of anhydrous atabrine *di*-hydrochloride. Add 3 mg. to the weight found to compensate for inherent errors of the method. The content of anhydrous atabrine *di*-hydrochloride should be not less than 92.5 per cent or more than 94.5 per cent.

PROCAINE HYDROCHLORIDE-ABBOTT (See New and Nonofficial Remedies, 1940, p. 81).

The following additional dosage forms have been accepted:

Ampoules Procaine Hydrochloride 1%, W/V, 1½ cc.: Each 1½ cc. contains procaine hydrochloride-U. S. P. 0.015 Gm., sodium chloride and chemically pure water to make an isotonic solution.

Ampoules Procaine Hydrochloride 1%-Epinephrine 1:50,000 Solution, 2 cc.: Each 2 cc. contains procaine hydrochloride-U. S. P. 0.02 Gm. (⅓ grain), epinephrine 0.00004 Gm. (1/1,600 grain) and sodium bisulfite 0.002 Gm. in isotonic solution.

BOVINE TETANUS ANTITOXIN (See New and Nonofficial Remedies, 1940, p. 419).

Mulford Biological Laboratories, Sharp & Dohme, Philadelphia.

"Lyovac" Tetanus Antitoxin (Bovine).—An antitoxin derived from the blood serum of cattle immunized against the toxin of Bacillus tetani (Clostridium tetani). It is packaged by the "Lyovac" process, which consists essentially of rapid freezing at a temperature far below the freezing point, together with rapid dehydration under high vacuum without

melting or fusing of the original frozen substance. Marketed in packages containing one ampule vial of lyophilized antitoxin representing 1,500 units and a 3 cc. ampule vial containing distilled water for restoration of the antitoxin, with a 1 cc. ampule vial of normal bovine serum (1: 10 dilution) for sensitivity tests; and in packages containing one ampule vial of lyophilized antitoxin representing 10,000 units and a 20 cc. ampule vial containing distilled water for restoration of the antitoxin, with a 1 cc. ampule vial of normal bovine serum (1: 10 dilution) for sensitivity tests.

PHYSIOLOGICAL SOLUTION OF SODIUM CHLORIDE (See New and Nonofficial Remedies, 1940, p. 379).

The following dosage form has been accepted:

Ampoule Physiological Solution of Sodium Chloride, 50 cc.
Prepared by Endo Products, Inc., Richmond Hill, N. Y.

SODIUM MORRHUATE (See New and Nonofficial Remedies, 1940, p. 486).

The following dosage forms have been accepted:

Ampoule Solution Sodium Morrhuate 5% with Benzyl Alcohol 2%, 2 cc.: Each cubic centimeter contains sodium morrhuate 0.05 Gm. and benzyl alcohol 0.02 Gm. in aqueous solution.
Prepared by Endo Products, Inc., Richmond Hill, N. Y. No U. S. patent or trademark.

Ampoule Solution Sodium Morrhuate 5% with Benzyl Alcohol 2%, 5 cc.: Each cubic centimeter contains sodium morrhuate 0.05 Gm. and benzyl alcohol 0.02 Gm. in aqueous solution.
Prepared by Endo Products, Inc., Richmond Hill, N. Y. No U. S. patent or trademark.

Solution Sodium Morrhuate 5% with Benzyl Alcohol 2%, 25 cc. Bottle: Each cubic centimeter contains sodium morrhuate 0.05 Gm. and benzyl alcohol 0.02 Gm. in aqueous solution.
Prepared by Endo Products, Inc., Richmond Hill, N. Y. No U. S. patent or trademark.

ASCORBIC ACID (See New and Nonofficial Remedies, 1940, p. 530).

The following dosage forms have been accepted:

Tablets Ascorbic Acid, 15 mg.
Prepared by the Upjohn Company, Kalamazoo, Mich.
Tablets Ascorbic Acid, 25 mg.
Prepared by the Upjohn Company, Kalamazoo, Mich.
Tablets Ascorbic Acid, 50 mg.
Prepared by the Upjohn Company, Kalamazoo, Mich.
Tablets Ascorbic Acid, 100 mg.
Prepared by the Upjohn Company, Kalamazoo, Mich.

NICOTINIC ACID (See New and Nonofficial Remedies, 1940, p. 524).

The following dosage forms have been accepted:

Tablets Nicotinic Acid, 20 mg.
Prepared by the Upjohn Company, Kalamazoo, Mich.
Tablets Nicotinic Acid, 50 mg.
Prepared by the Upjohn Company, Kalamazoo, Mich.
Tablets Nicotinic Acid, 100 mg.
Prepared by the Upjohn Company, Kalamazoo, Mich.

MERCURIC SUCCINIMIDE (See New and Nonofficial Remedies, 1940, p. 338).

Endo Products, Inc., Richmond Hill, N. Y.

Ampoules Mercury Succinimide-Endo, 0.01 Gm. (⅙ grain), 1 cc.

SODIUM THIOSULFATE (See New and Nonofficial Remedies, 1940, p. 488).

The following dosage forms have been accepted:

Ampoules Sodium Thiosulfate Solution-Endo, 0.5 Gm., 5 cc.
Prepared by Endo Products, Inc., Richmond Hill, N. Y.
Ampoules Sodium Thiosulfate Solution-Endo, 1.0 Gm., 10 cc.
Prepared by Endo Products, Inc., Richmond Hill, N. Y.

SULFANILAMIDE (See New and Nonofficial Remedies, 1940, p. 489).

The following dosage forms have been accepted:

Tablets Sulfanilamide-Endo, 5 grains.
Prepared by Endo Products, Inc., Richmond Hill, N. Y. No U. S. patent or trademark.

Tablets Sulfanilamide-Endo, 7½ grains.
Prepared by Endo Products, Inc., Richmond Hill, N. Y. No U. S. patent or trademark.

QUINIDINE SULFATE (See New and Nonofficial Remedies, 1940, p. 395).

The following dosage form has been accepted:

Capsules Quinidine Sulfate, 0.2 Gm. (3 grains).
Prepared by the Abbott Laboratories, North Chicago, Ill.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING ADDITIONAL FOODS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO ACCEPTED FOODS.

FRANKLIN C. BING, Secretary.

Yeast of High Vitamin B_1 Content for Bakers

The Council has encouraged the restorative addition of essential vitamins and minerals to processed foods as one method of facilitating the selection of a diet that is adequate for good health. A pound loaf of ordinary white bread provides about 50 to 100 international units of vitamin B_1. A pound loaf of whole wheat bread (meaning the genuine whole wheat bread) provides about 450 international units of vitamin B_1. The thiamine content of white bread may be increased in a variety of ways. One method consists in the use of high vitamin B_1 potency yeast in place of the ordinary yeast that is used for leavening the dough.

The following product has been given consideration by the Council and found acceptable as a preparation for increasing the nutritive value of ordinary bread with respect to vitamin B_1:

FOODS FOR SPECIAL DIETETIC PURPOSES (*See* Accepted Foods, 1939, p. 295).

Standard Brands Incorporated, New York.

FLEISCHMANN'S HI-B YEAST FOR BAKERS, a variety of baker's yeast, Saccharomyces cerevisiae, cultured to yield a product of high vitamin B_1 content. The yeast is distributed in compressed cakes, weighing 1 pound and containing 30,000 international units of vitamin B_1, for use by bakers as an ingredient of bread doughs. Before shipment every batch of yeast is tested for vitamin content and baking strength and also is examined bacteriologically.

Analysis (submitted by manufacturer).—Moisture 70.0%, total solids 30.0%, ash 1.8%, fat (ether extract) 0.5%, protein (N × 6.25) 15.5%, glycogen 9.5%, yeast fiber 2.7%, carbohydrates other than yeast fiber (by difference) 9.5%.

Assays show that the product uniformly contains not less than 30,000 international units of vitamin B_1 to the pound. Other vitamins of the B complex natural to yeast also are present. Used in the amount of 2 per cent in a bread formula (2 pounds of compressed yeast to 100 pounds of flour) the resulting bread contains approximately 450 international units of vitamin B_1 to the pound loaf.

PREPARATIONS USED IN THE FEEDING OF INFANTS (*See* Accepted Foods, 1939, p. 156).

Gerber Products Co., Fremont, Mich.

GERBER BRAND STRAINED PEAR AND PINEAPPLE.

Analysis (submitted by manufacturer).—Moisture 81.5%, total solids 18.5%, ash 0.3%, protein (N × 6.25) 0.3%, fats (ether extract) 0.3%, crude fiber 0.7%, carbohydrates other than crude fiber (by difference) 16.9%, calcium[1] (Ca) 0.0096%, phosphorus (P) 0.0078%, iron (Fe) 0.0019%.[2]

Calories.—0.72 per gram; 20.4 per ounce.

H. J. Heinz Company, Pittsburgh.

HEINZ BRAND STRAINED TOMATO SOUP, a canned condensed strained cooked mixture of tomatoes, carrots, potatoes, celery, sucrose, rice, soya bean flour, dried whey and sodium chloride.

Analysis (submitted by manufacturer).—Moisture 83.7%, total solids 16.3%, ash 1.3%, sodium chloride (NaCl) 0.8%, fat (ether extract) 0.1%, protein (N × 6.25) 2.0%, crude fiber 1.6%, carbohydrates other than crude fiber (by difference) 10.8%, total sugar 9.4%, calcium (Ca) 0.022%, phosphorus (P) 0.039%, iron (Fe) 0.0009%, copper (Cu) 0.00021%, acidity as citric acid 0.49%, *p*H 4.4.

Protocols of biologic assay submitted by manufacturer (1940) showed that this product contains 23.17 international units of vitamin A, 0.262 international unit of vitamin B_1, and 0.505 Sherman-Bourquin unit of riboflavin per gram; 656.8, 7.4 and 14.3 per ounce. Report of chemical titration (1940) showed that the product contained 5.4 international units of vitamin C per gram, 153 per ounce.

Calories.—0.54 per gram; 15 per ounce.

UNCLASSIFIED AND MISCELLANEOUS FOODS, PEANUT BUTTER (*See* Accepted Foods, 1939, p. 381).

Rose Field Packing Company, Ltd., Alameda, Calif.

SKIPPY BRAND PEANUT BUTTER CHUNK STYLE, regular peanut butter to which one-eighth inch particles of roasted peanuts have been added, sugar and sodium chloride.

Analysis (submitted by manufacturer).—Moisture 0.4%, total solids 99.6%, ash 3.1%, fat (ether extract) 49.1%, protein (N × 6.25) 30.8%, crude fiber 0.9%, carbohydrates other than crude fiber (by difference) 11.3%.

Calories.—6.3 per gram; 179 per ounce.

1. Calcium was determined by the method of Meloche, V. W.; Clifcorn, L. E., and Griem, W. B.: Determination of Calcium in Mineral Mixtures. J. A. O. A. C. **18:** 240 (May) 1935.

2. Iron determined by the method of Winsor, H. W.: Intensity and Stability of Ferric Thiocyanate Color, Ind. Eng. Chem., Analytical Ed. **9:** 453, 1937.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 30, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

FULL TIME TEACHING IN CLINICAL MEDICINE

In 1900 there were some 155 medical colleges in the United States. Today the number of four year medical schools is sixty-six. In those days medical schools included some for which preparation was merely high school graduation, a few which required some university education. Today the majority of medical students have had at least three years of college education before entering on the study of medicine. Thus has come about a tremendous advancement of standards. No doubt the first great impetus toward that advancement came when the American Medical Association established the Council on Medical Education and Hospitals and began publishing regularly the statistics on medical schools and on licensing boards. However, the situation was dramatized when the first report by Abraham Flexner was published under the auspices of the Carnegie Foundation for the Advancement of Teaching. This publication served to call public attention to the necessity for improvement and thereby gave to the American Medical Association the type of support that it needed in its drive for educational advancement. The work here mentioned is probably the best known contribution of Abraham Flexner. However, his autobiography, recently published,[1] serves to remind us of many other valuable contributions to the civilization of our times.

At the age of 17 Abraham Flexner was sent to Johns Hopkins University. It becomes obvious, as one follows through Mr. Flexner's career, that Johns Hopkins and what he saw later in Germany influenced him tremendously and through him came to have a significant effect on all American medical education. He developed the concept that German medical education was sound precisely where American medical education was deficient, referring particularly to adequate entrance requirements which were enforced, close relationships between the laboratories and clinics, teachers who were professors and not practicing physicians, and a high place for research. He found some minor defects in German medical education but he does not emphasize these greatly.

If there is any one aspect of Mr. Flexner's recommendations that has agitated American medicine in recent years, it is the question of full-time versus part-time clinical teaching. In his twelfth chapter Mr. Flexner tells the story of the introduction of the full-time system. According to Mr. Flexner, he himself is not to be credited with the authorship of what is called the full-time scheme. He relates that the suggestion came to him from Dr. Mall, eminent professor of embryology and anatomy in Johns Hopkins University Medical School, when Dr. Mall said "If the school could get a sum of approximately a million dollars, in my judgment there is only one thing that we ought to do with it—use every penny of its income for the purpose of placing upon a salary basis the heads and assistants in the leading clinical departments, doing for them what the school did for the underlying medical sciences when it was started." The scheme, however, did not originate with Dr. Mall but is attributed to the great Leipzig physiologist Ludwig, who one day, so Mall said, remarked to him that sooner or later teaching and research in clinical medicine and surgery would have to be organized on the same basis as teaching and research in anatomy and pathology. It is asserted that both of these had once been in the hands of practicing physicians and neither had prospered as they should until they commanded the full time and strength of the men engaged in their teaching and cultivation. Mr. Flexner reports that this scheme was unanimously endorsed by the laboratory men but there was a rift among the clinicians, and that the opinion of Dr. William Osler, then at Oxford, was adverse. Since the establishment of the full-time plan it has been a constant subject of debate among medical educators. In the United States today our medical schools vary from

1. Flexner, Abraham: I Remember, New York, Simon and Schuster, 1940.

some which have a majority of full-time teachers in the clinical branches to one of our leading medical schools which still has none. No doubt an impartial evaluation of our educational system would recognize certain aspects of full-time teaching which are desirable but would also recognize some of the defects which the introduction of this system has created.

One of the extraordinary phenomena of the entrance of the full-time teacher into medical education has been a sort of group attitude in questions concerning medical economics. Here is perhaps a problem to which the sociologist or psychologist might well give special attention. In questions concerning the costs and distribution of medical service, in problems of political and governmental character that have agitated the medical profession in recent years, there has failed to be a community of interest. Part or full-time teachers in the medical schools have not in general supported the elected representatives of the medical profession. True, there have been on both sides individuals who have departed from the herd. In general, the alinements have been as here suggested.

As the leaders of one group have sought for federal funds to aid the medical schools, practitioners of medicine have asserted that they were concerned primarily with their own rather than with the public good. As the practitioners of medicine have sought to maintain independence from governmental control, the teaching groups have charged that they were protecting their professional interest in the patient's pocketbook and have not been concerned with the public good. Obviously the economic situation of the schools, and of the private practitioners as well, in these times of stress has brought about extraordinary conditions in which the true issues may occasionally have been lost to sight. The problem of educating physicians for the care of the sick and the increasing costs of medical education, associated with university control, may have some responsibility for this situation.

Incidentally, the answer to the problem of medical care cannot lie in state provision of medical care to be given under the auspices of medical educational institutions. The mere fact that there exist so many states in which there are institutions for medical education, that there are such wide areas in which educational institutions are not available, the fact that educational institutions tend to multiply in large centers where a mass of so-called clinical material is available for teaching purposes, would indicate that the chief purpose of the educational institution is to educate and that the chief purpose of the physician is the care of the sick.

Unfortunately the assumption of these attitudes seems to result in a loss of interest by the practicing medical profession in the whole problem of medical education. The physicians of large cities have become interested because there is obviously a social, professional and educational advantage in being associated with a teaching institution. Physicians far removed, however, from teaching centers express disinterest in many instances simply because they have felt that the teaching institutions were much more concerned with their own prestige and advancement than with the primary problems of medical practice. The extension of the functions of medical education to the field of graduate education of the practicing physician would unquestionably bring these physicians again within the fold of medical education.

MECHANISM OF EXPERIMENTAL RENAL HYPERTENSION

From a study of the hemodynamics of the perfused isolated canine kidney, Kohlstaedt and Page [1] of the Lilly Laboratory for Clinical Research, Indianapolis, have formulated a definite theory as to the method of production of arterial hypertension, subsequent to experimental renal ischemia.

Six years ago Goldblatt and his co-workers [2] of the Institute of Pathology, Western Reserve University, proved that in dogs renal ischemia caused by bilateral compression of the renal arteries is almost invariably followed by a definite and persistent elevation in systolic blood pressure. Since this secondary hypertension is not prevented by preliminary denervation to the kidneys, it seemed logical to assume that it is due to some unknown retention product or internal secretion from the kidneys. Transplantation of ischemic kidneys into normal dogs confirmed the so-called internal secretion theory. Much experimental and clinical evidence seems to indicate that renin may be the pathologic internal secretion responsible for this hypertension, even though it has not been shown to the satisfaction of most clinicians that renin is actually liberated by the ischemic kidney. Proof is made difficult by the fact that renin in itself is not a pressor substance and requires chemical activation to produce vasoconstriction.

In order to confirm the renin hypothesis, Kohlstaedt and Page perfused the isolated normal canine kidney with defibrinated blood under varying hemodynamic conditions. Venous blood samples drawn from these perfused kidneys were activated with renin complement and the resulting angiotonin titrated for pressor effects by pulsate perfusion through the isolated rabbit ear.

Excised normal canine kidney perfused under normal pulsate arterial pressure did not secrete renin into the venous blood. Venous blood collected at the beginning and the end of such perfusions showed no differences in vasoconstriction properties when complemented with renin activator. When the renal artery was partially clamped, however, and the resulting reduced blood flow continued for 100 or more minutes, the venous blood samples acquired vasoconstrictor properties. Renin secretion was not prevented by increasing the rate of perfusion flow to normal by increasing the per-

1. Kohlstaedt, K. G., and Page, I. H.: J. Exper. Med. **72**: 201 (Aug.) 1940.
2. Goldblatt, Harry; Lynch, James; Hanzal, R. F., and Summerville, W. W.: J. Exper. Med. **59**: 347 (March) 1934.

fusion pressure. From this and from other hemodynamic tests the authors conclude that the essential cause of renin liberation is not changes in blood pressure or perfusion rate but reduced pulse pressure. Numerous investigators have shown that perfusion of isolated organs under constant pressure almost invariably leads to edema, a pulsate perfusion being necessary for normal tissue maintenance. Presumably a pulsate pressure is necessary for adequate interstitial lymph drainage.

Summarizing their experimental evidence, the Indianapolis clinicians formulate a definite theory. According to this theory, compression of the renal artery "leads to partial conversion of pulsate to continuous blood flow in the kidney with edema and anoxia of the cells of the tubules as the chief results. Increase in cellular membrane permeability follows and allows the liberation of the large renin molecule. Renin reacts with renin activator to produce angiotonin, which itself raises blood pressure and causes efferent glomerulin arteriolar constriction and further tubular anoxia. A vicious circle may be thus set up which results in sustained arterial hypertension."

While this pulse pressure theory will require experimental and clinical confirmation before it can be definitely accepted, it would seem to be the only definite theory thus far suggested to explain the physiologic mechanism of experimental renal hypertension. It is a provocative working hypothesis for further clinical research. The possible antigenic properties of homologous renin and angiotonin are now under investigation.

Current Comment

MR. MACFADDEN DISCUSSES ARMY MEDICAL SERVICE

In the current issue of *Liberty* Mr. Bernarr Macfadden, its publisher, signs an editorial in which he proposes that homeopaths, osteopaths, naturopaths and chiropractors be given a chance to demonstrate the value of their methods, using the soldiers of the American army as guinea pigs. He cites statistics to indicate that osteopaths lost only one fourth of 1 per cent of their patients from influenza in the 1918 epidemic and that doctors lost from 5 to 6 per cent. He says that osteopaths had a fatality record of 10 per cent for pneumonia as compared with a medical fatality record of 33 per cent. As for the chiropractors, Mr. Macfadden indicates that they claim even better records. Obviously the validity of such statistics is highly questionable, even taking into account the fact that anybody who gets sick enough gets a doctor and that therefore mortality rates would naturally be higher for the seriously sick than for people who are not seriously sick. Furthermore, there would also be a considerable amount of doubt as to the diagnoses made by incompletely and peculiarly trained cultists as contrasted with the scientific diagnoses made by physicians. People who diagnose in their patients diseases which do not exist find it easy to cure such cases. When a common cold is called influenza and pneumonia, it is easy to claim a cure. Many a cold gets well without any treatment whatever. Mr. Macfadden complains, incidentally, that the soldiers overeat and that their work is not sufficient to take up their food intake. This generalization is made, of course, without the slightest knowledge on his part of just how much soldiers eat or of the considerable scientific attention that is being given to nutrition for American soldiers. Fortunately for the American soldier the medical corps is under the direction of competent officials, and the work of that department is, in turn, controlled by the general staff. No doubt these men realize their obligation to the young men who are under their care and will not permit themselves to be swayed by the extravagant claims of irresponsible cultists or by the distorted diatribes of Bernarr Macfadden.

ALCOHOL AND THIAMINE IN NUTRITION

The amount of food consumed by those who regularly drink alcohol in considerable quantities influences the development of the so-called alcoholic diseases. Once a full diet was thought to counteract toxic effects of alcohol, but now it is known that certain of these typical diseases—Korsakoff psychosis, alcoholic polyneuritis, pseudopellagra and some types of encephalopathia alcoholica—are real vitamin deficiencies. Fantus[1] has recently emphasized various obvious as well as more subtle factors influencing the thiamine intake; inadequate consumption of foods containing vitamin B_1 is plainly of importance and the statement is made that "chronic alcoholism is the most frequent predisposing factor in cases of severe involvement in Cook County Hospital," which situation is undoubtedly typical of other large centers. According to Jolliffe,[2] alcohol may contribute to nutritional deficiency disease by decreasing appetite as a result of its irritant action on the gastrointestinal mucosa, by interference with absorption, by substituting its "vitamin-free" calories for energy in the form of vitamin-containing food and by disturbing the ratio between metabolizable energy and thiamine. Only when the vitamin/calory ratio is maintained above a marginal value will there be freedom from subclinical or outspoken signs of deficiency; a diet can be rendered inadequate by either decreasing the vitamin intake or increasing the vitamin-free sources of calories. Jolliffe has shown that the rather narrow margin of safety in the modern American dietary with respect to adequacy of vitamin B_1 can be greatly decreased or largely erased by the consumption of alcohol, since the metabolism of the alcohol calories increases the need for thiamine which the alcohol itself cannot provide. Frequently the true etiology of the vitamin deficiency disease is obscured by naming the disease after the condition responsible for the increased demand for the vitamin as, for instance, "diabetic," "metabolic," "infectious," "gestational" or "gastrogenous" polyneuritis. Obviously a close relationship exists between energy metabolism and thiamine requirement.

1. Fantus, Bernard; Traut, E. F., and Greenebaum, Regina S.: The Therapy of Subvitaminosis B_1, J. A. M. A. **115**: 450 (Aug. 10) 1940.
2. Jolliffe, Norman: The Influence of Alcohol on the Adequacy of the B Vitamins in the American Diet, Quart. J. Studies on Alcohol **1**: 74 (June) 1940.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

NEW ARMY HOSPITALS

New army hospitals are to be built in New Orleans, Savannah, Ga., and Hinesville, Ga., under the defense appropriation bill, according to *Modern Hospital.* The $1,200,000 cantonment hospital planned for New Orleans will have a capacity of 1,000 beds and will be of the pavilion type, probably of temporary construction. It will be located in the New Orleans lake shore development along Lake Pontchartrain, according to present plans, and will be used to give treatment to men stationed at Camp Beauregard and other army establishments in that section of the country.

A hospital of from 150 to 200 beds has been approved for the airport in Savannah to provide for the 3,500 officers and men of the air corps stationed there. For the Savannah antiaircraft area with six regiments, or about 15,000 men, an institution of from 600 to 800 beds will be constructed at Hinesville. The hospitals to be built in Georgia are expected to be replaced later by more substantial structures, since the Savannah and Savannah area army bases will be permanent.

CONFERENCE OF CORPS AREA SURGEONS

A meeting of corps area surgeons was held at the office of the surgeon general, U. S. Army, Washington, D. C., October 14-16, to discuss problems arising from the induction of the National Guard, expansion of the Army and induction of trainees. Major Gen. James C. Magee, surgeon general, presided. All corps area surgeons, except Col. Will L. Pyles of the Fifth Corps Area, as well as heads of divisions in the office of the surgeon general were present. Among other matters, it was decided to station a nurse at headquarters of each corps area to advise the corps area surgeon on matters affecting nurses, especially in connection with the procurement of 4,019 nurses within the next few months for active duty with the Army.

NATIONAL DEFENSE NIGHT IN HOLLYWOOD

The Hollywood Academy of Medicine devoted its meeting in the Hollywood Roosevelt Hotel, November 14, to a consideration of national defense. Dr. Roy Ledford, San Diego, discussed medical defense; other speakers were Capt. Frederic L. Conklin, M. C., U. S. Navy, chief, surgical service, U. S. Naval Hospital, San Diego; Lieut. Col. Harold V. Raycroft, M. C., U. S. Army, past surgeon, Fort McArthur; Lieut. Col. Dennis W. Sullivan, unit instructor, California National Guard, 160th; Lieut. Comdr. Roy J. Leutsker, M. C., U. S. Navy, chief, medical service, U. S. Naval Hospital, San Diego, and Major John F. Bohlender, M. C., U. S. Army, unit instructor for the medical corps reserve.

BULLETIN OF WAR MEDICINE

As a part of its contribution to medical preparedness, the Medical Research Council of Great Britain has made available a publication called the *Bulletin of War Medicine,* which is a collection of abstracts dealing with the handling of many military-medical affairs, taken from the available medical literature. The first number consists of 62 pages containing 109 abstracts. This Bulletin is available to American readers by addressing the British Library of Information, 50 Rockefeller Plaza, New York. The price is 75 cents per copy.

PUBLIC HEALTH OFFICERS ASSIGNED TO CAMPS

Nine officers of the U. S. Public Health Service have been assigned to the nine U. S. Army corps areas to act as liaison officers with the corps area surgeons especially in problems arising in extra-military areas. Environmental sanitation with emphasis on control of communicable diseases will be their chief responsibility, according to an announcement. The officers assigned are: Drs. Louis L. Williams, Walter T. Harrison, Frank V. Meriwether, Lon O. Weldon, Knox E. Miller, Albert E. Russell, Harry J. Warner, Joseph Bolten and Edgar W. Norris.

MEDICOMILITARY LECTURES IN PHILADELPHIA

A course of lectures on "Military Maxillofacial Surgery" began, November 18, at the Philadelphia County Medical Society Building under the auspices of the Philadelphia County medical and dental societies, the schools of dentistry of the University of Pennsylvania and Temple University and the W. W. Keen Chapter of the Association of Military Surgeons of the United States. The lectures were planned at the request of the surgeon general of the U. S. Army. The first in the series was given by Dr. Oscar V. Batson, professor of anatomy, University of Pennsylvania School of Medicine, and Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, on "Anatomy of the Face, Jaws and Neck in Relation to War Injuries."

The final lectures in the series presented during the fall by the Philadelphia County Medical Society were as follows:

Lieut.-Col. Asa M. Lehman, Medical Corps, U. S. Army, Noncombatant Military Hospitals and Medical Installations—Civilian Institution Sponsored Hospitals of the Army, November 14.

Dr. Frank W. Burge, The Tuberculosis Problem in the Mobilization of Military and Naval Personnel, November 21.

Lieut. Commander Nathaniel M. Levin, Medical Corps Reserve, U. S. Navy, War Injuries—Air and Food Passages, December 5.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

WAR DEPARTMENT

Following is a list of medical reserve corps officers who had been placed on extended active duty with the regular army by War Department order, Washington, D. C., up until November 8:

ABBAMONTE, Louis Walter, 1st Lieut., Norwich, N. Y.
ABRAMS, Morris, 1st Lieut., Chicago.
ADAMS, Eldridge Stevens, Lieut. Col., Washington, D. C.
ADAMS, George Furman, 1st Lieut., San Francisco.
AKIN, Robert Louis, 1st Lieut., Monterey, Tenn.
ALBERTI, Vincent Samuel, 1st Lieut., New York.
ALBUS, William R., Captain, Fort Sheridan, Ill.
ALLEN, Robert Wilson, Captain, Keystone, S. D.
ALLEN, Roy Johnson, 1st Lieut., Sumner, Iowa.
ALLEN, Samuel, 1st Lieut., East Liverpool, Ohio.
ALPER, Irwin Isidor, Captain, Ithaca, N. Y.
AMES, Edward S., 1st Lieut., Forest Hills, N. Y.
AMLIE, Paul Jones, 1st Lieut., Tripoli, Iowa.
AMSTER, Milton William, Captain, Brooklyn.
ANDERSON, John Leonard, Captain, Osceola, Iowa.
ANDERSON, Edgar Emmet, Captain, Marysville, Kan.
ANGELL, Howard Hathaway, 1st Lieut., Detroit.
ANGELLA, Carl Louis, 1st Lieut., Roseville, Calif.
APONTE, Pedro Rivera, Captain, Fajardo, P. R.
ARNISTEAD, William Wilchia, Captain, Shreveport, La.
ARNOLDI, Louis Bernhard, 1st Lieut., New Orleans.
ARONOFF, Solomon, 1st Lieut., Hoboken, N. J.
ASCHER, David Samuel, 1st Lieut., Boston.
ASHTON, Paul Louis, 1st Lieut., San Francisco.
AUERBACH, Sidney, 1st Lieut., New York.
AUSTER, Benjamin, 1st Lieut., Bronx, N. Y.
AVNER, Saul Leighton, Captain, Savannah, Ga.
AYERS, Robert Lawrence, 1st Lieut., Penngrove, Calif.
AZORIN, Louis Arthur, 1st Lieut., Omaha.
BACH, Leo Francis, Captain, Mapleton, Minn.
BADGER, Edward Bruce, Captain, Minneapolis.
BAER, Erwin Jerome, 1st Lieut., Seattle.
BAERS, Harry, 1st Lieut., St. Louis.
BAIRD, Robert Desmond, Jr., 1st Lieut., Edwardsville, Ill.
BALKO, Andrew John, Captain, El Paso, Texas.
BALLWEG, Harry Albert, Captain, Brooklyn.
BAMBACE, Felix Shelley, Captain, Spokane, Wash.
BARBER, Herbert Gordon, 1st Lieut., Omaha.
BARKS, Orville Leon, 1st Lieut., Groveland, Fla.
BARRETT, Robert Syer, 1st Lieut., Hamlin, W. Va.
BARTOLINI, Frank Joseph, 1st Lieut., Phillipsburg, N. J.
BAXTER, Clarence Pennell, Lieut. Col., San Diego, Calif.
BEATY, Charles Samuel, 1st Lieut., Cherokee, Okla.
BECKER, Harry Gregory, Captain, Evanston, Ill.
BEGLEY, Philip Jones, 1st Lieut., Hyden, Ky.
BELL, Allan Brooks, 1st Lieut., Shelton, Wash.
BELL, Herbert Joseph, Captain, Denver.
BELL, Robert Stanton, 1st Lieut., Ollie, Iowa.
BELZ, Joseph A., Captain, Baltimore.
BENENSON, Abram S., 1st Lieut., East Rockaway, N. Y.
BENNETT, Bruce Hardy, 1st Lieut., Washington, D. C.
BENNETT, Webster William, 1st Lieut. Harrisburg, Pa.
BENNETT, William Horace, 1st Lieut., Paris, Ark.
BERG, Philip, Jr., 1st Lieut., Philadelphia.
BERGMAN, Harold Hanford, 1st Lieut., Gillette, Wyo.
BERLINER, Harry Morris, Captain, Bronx, N. Y.
BIER, Robert Allen, Captain, Washington, D. C.
BISKIND, Gerson Ravinson, 1st Lieut., San Francisco.
BLACK, Benjamin Stephen, 1st Lieut., Rochester, N. Y.
BLOCKSOM, Berget Henri, Jr., 1st Lieut., Rockford, Ill.
BLOEMENDAAL, Edwin G. J., Captain, Orange City, Iowa.
BOBES, Solomon Subere, Captain, Wheeling, W. Va.
BOCHENEK, John Edward, 1st. Lieut., Newark, N. J.
BODEN, Worthey Carl, 1st Lieut., Davenport, Iowa.
BOLTON, Ralph Daniel, 1st Lieut., Canton, Ohio.
BONSIGNORE, Marco Romolo, 1st Lieut., Rochester, N. Y.
BOROS, Harold Henry, 1st Lieut., Chicago.
BOSLOW, Harold Meyer, 1st Lieut., Appalachia, Va.
BOUCHER, Adlore Louis, 1st Lieut., Denver.
BOURLAND, Philip Ewing MacIntyre, 1st Lieut., Calumet, Mich.
BOYDSTONE, Joseph Oscar, Captain, Hot Springs, Ark.
BRADLEY, Harold John, 1st Lieut., Brevard, N. C.
BRADY, Richard Randall, Captain, Tacoma, Wash.
BRAMBLE, Russell Blaine, Captain, South San Francisco, Calif.
BRENNER, William Rush, 1st Lieut., Bazine, Kan.
BRESLIN, John Francis, Captain, Bridgeport, Pa.
BRIGHT, Albert Seymour, 1st Lieut., Silver Spring, Md.
BRIMSON, James Ashton, 1st Lieut., Welfare Island, N. Y.
BRIN, Alfred Ross, 1st Lieut., Terrell, Texas.
BRISTOL, Frank Ernest, Jr., 1st Lieut., Summit, N. J.
BRITTON, Bloyce Hill, Captain, El Paso, Texas.
BROCKMAN, Sidney Clark, 1st Lieut., Louisville, Ky.
BRODERICK, Thomas Aloysius, 1st Lieut., San Francisco.
BROOKS, Robert Haney, 1st Lieut., Celeste, Texas.
BROTCHNER, Robert Jacob, 1st Lieut., St. Paul.
BROTMAN, Jacob H., Captain, Corsicana, Texas.
BROWN, Charles Thomas, Captain, San Marcos, Texas.
BROWN, John Edward, Jr., Captain, Blue Mountain, Miss.
BROWN, Otto Richard, Captain, Los Angeles.
BROWN, Raymond Milton, 1st Lieut., San Francisco.
BROWN, Robert Andrew, Jr., 1st Lieut., Greenville, S. C.
BRUNO, Nicholas Joseph, 1st Lieut., Stambaugh, Mich.
BRUSSELL, Albert Sinai, Captain, St. Paul.
BRUTON, Ogden Carr, Captain, Nashville, Tenn.
BRYANT, Mason David, Jr., 1st Lieut., Lowell, Mass.
BUCKHOLD, Wilbert William, 1st Lieut., Brandenburg, Ky.
BUCKHOLTS, Walter Howell, Captain, Elephant Butte, N. M.
BUERMANN, Henry, Jr., 1st Lieut., Maplewood, N. J.
BURKS, Arthur Lynn, 1st Lieut., San Francisco.
BURNETT, Jack Frost, 1st Lieut., Ennis, Texas.
BURPEAU, William Purdy, Captain, East Orange, N. J.
BURSTEIN, Henry Albert, Captain, Toledo, Ohio.
BURTON, Horace French, 1st Lieut., East Tawas, Mich.
BUSH, Glendon Joseph, 1st Lieut., Detroit.
BUTMAN, Burton Brooker, 1st Lieut., Syracuse, N. Y.
BLARS, Perry J. C., 1st Lieut., Lampasas, Texas.
BYARS, Jerry J. C., 1st Lieut., Lampasas, Tex.
CACCIATORE, Thomas Joseph, 1st Lieut., Brooklyn.
CADA, Edward George, 1st Lieut., Berwyn, Ill.
CALARCO, John Joseph, 1st Lieut., Jamaica, N. Y.
CAMARDELLA, Ralph Andrew, 1st Lieut., Lynbrook, N. Y.
CAMPBELL, Joseph Lester, Captain, Ulster, Pa.
CANNON, Edward Gaine, Captain, Hope Mills, N. C.
CALLAWAY, James Willis, Captain, La Jolla, Calif.
CANTRELL, Roy Hammond, Captain, Dallas, Texas.
CAPALBO, Sylvester Alfred, 1st Lieut., Philadelphia.
CAPPOLA, Michael Thomas, Jr., 1st Lieut., Philadelphia.
CARDONA, Angel Antonio, Captain, Washington, D. C.
CAROFIGLIO, Louis Edward, Captain, Chicago.
CARROLL, Charles Thomas, 1st Lieut., Yonkers, N. Y.
CASSEL, Melvin Alfred, 1st Lieut., St. Louis.
CASSIDY, John M., Captain, Chandler, Okla.
CAVENDER, Savino Walter, 1st Lieut., St. Louis.
CHAMPION, Walton Thomas, 1st Lieut., Gillett, Ark.
CLAGETT, Augustus Henry, Jr., Captain, Providence, R. I.
CLAIBORNE, John Wallons, Jr., Captain, Fort Oglethorpe, Ga.
CLARKE, Charles Luther, 1st Lieut., Memphis, Tenn.
CLARKE, Lloyd Anton, 1st Lieut., Kenmore, N. Y.
CLIFF, Arthur Edgar, Captain, Washington, D. C.
CHAPPELL, Ewin Summers, 1st Lieut., Washington, D. C.
COGAN, Leo Judas, Captain, Milwaukee.
COHEN, Lawrence Jack, 1st Lieut., Baltimore.
COHEN, Leon John, 1st Lieut., Bronx, N. Y.
COLEMAN, William Richard, 1st Lieut., Torrington, Wyo.
COLPOYS, William Patrick, Jr., 1st Lieut., Dorchester, Mass.
COLQUITT, Alfred Olin, Jr., 1st Lieut., Spartansburg, S. C.
COLUCCI, David Dominic, 1st Lieut., Rochester, N. Y.
COLVIN, Paul Verlander, 1st Lieut., Longview, Texas.
CONNER, Cooper Marion, 1st Lieut., Fort Worth, Texas.
COONE, Herbert William, 1st Lieut., Providence, R. I.
CORGILL, Donald Alton, 1st Lieut., Monticello, N. Y.
COSTRINO, Joseph Alfred, 1st Lieut., St. Louis.
CRAFTS, John Gardner Hale, Captain, San Francisco.
CRAWFORD, James Marion, 1st Lieut., New Albany, Miss.
CRUTCHER, Luke Fain, 1st Lieut., Los Angeles.
CUMMING, Richard Cralle, Captain, Ocala, Fla.
CURRIE, Daniel Smith, Jr., 1st Lieut., Parkton, N. C.
CURTIS, Morris Williams, Captain, Williamsport, Pa.
CUVILLIER, Louis Marshall, Jr., 1st Lieut., Washington, D. C.
DAILEY, Jeremiah Aloysius, Captain, El Paso, Texas.
D'ALFONSO, Anthony Daniel, 1st Lieut., Philadelphia.
DAMERON, James Haden, Major, Livingston, Texas.
DAMIAN, Julius Daniel, 1st Lieut., Washington, D. C.
DANIELS, Elijah Robert, 1st Lieut., Orange, Calif.
DANIELS, John Quincy Adams, Captain, Portland, Ore.
DANISHEK, Emil Stephan, 1st Lieut., Seattle.
DART, Merrill Oren, 1st Lieut., Denver.
DATZ, Lewis Anthony, 1st Lieut., Pueblo, Colo.
DAVENPORT, John Robert, Captain, Holdenville, Okla.
DAVIDSON, Harold Jack, 1st Lieut., Tulsa, Okla.
DAVIDSON, Morris, 1st Lieut., Elkhart, Ind.
DAVIES, Dale Henley, 1st Lieut., Seattle.
DAVIS, Elmer Louis, Captain, Floresville, Texas.
DAVISON, Augustus Marion, 1st Lieut., Fayetteville, Ark.
DEL GIUDICE, Amore, 1st Lieut., Waterbury, Vt.
DELLINGER, Raiden Winfield, 1st Lieut., Rome, Ga.
DETER, Dwight Meyer, Captain, Austin, Texas.
DEUTSCH, Albert Leopold, 1st Lieut., Brooklyn.
DeVAN, William Todd, II, 1st Lieut., Philadelphia.
DeVITA, Jacob, 1st Lieut., Brooklyn.
DeVITTORIO, Armond Anthony, 1st Lieut., Ridgeway, Pa.
DIAMOND, Bernard Lee, 1st Lieut., Ann Arbor, Mich.
DIAMOND, Max Myer, 1st Lieut., Galveston, Texas.
DICKINSON, Louis Everett, Jr., 1st Lieut., Ravenna, Neb.
DIEHL, Earl Henry, Captain, Dunedin, Fla.
DIGANGI, Mariano Richard, 1st Lieut., Brooklyn.
DILWORTH, Warren Miller, 1st Lieut., Omaha.
DINES, George Louis, 1st Lieut., Caropolis, Pa.
DISARIO, Anthony Ryhham, 1st Lieut., Philadelphia.
DODSON, Charles Albert, Captain, Los Angeles.
DOHERTY, William Robert, 1st Lieut., Tuscaloosa, Ala.
DRESCHER, Emmett Burk, Captain, St. Louis.
DRUMMOND, N. Robert, 1st Lieut., Oklahoma City.
DUNCAN, Robert Whitworth, 1st Lieut., Fort Worth, Texas.
DURANT, John Ernest Cameron, 1st Lieut., New Bedford, Mass.
DUSHANE, Joseph Edward, 1st Lieut., Haverhill, Mass.
EAKER, Alan Bayliss, 1st Lieut., San Francisco.
EASTMAN, Wilfred W., Jr., Washington, D. C.
EASTMAN, Sylvester King, 1st Lieut., Emery, Utah.
EBY, Robert Elwood, 1st Lieut., New Rochelle, N. Y.
ECKSTEIN, Albert, 1st Lieut., Staten Island, N. Y.
EDWARDS, Walton Merideth, 1st Lieut., Oakland, Calif.

EINHORN, Harold, 1st Lieut., Chicago.
ELKINS, Marvin G., Jr., 1st Lieut., El Reno, Okla.
ELKINS, Oliver Wayne, 1st Lieut., Junction City, La.
EMERSON, George Oliver, Jr., Tavares, Fla.
EMMONS, Lowell Luther, 1st Lieut., Ontario, Calif.
EPERJESSY, Ernest Zoltan, 1st Lieut., Johnstown, Pa.
EPSTEIN, Carl Charles, 1st Lieut., St. Louis.
EPSTEIN, Ernest David, 1st Lieut., Sioux City, Iowa.
ERICKSON, John Walfred, 1st Lieut., Hot Springs, Ark.
ERSHLER, Irving, 1st Lieut., Binghamton, N. Y.
ERVIN, Clinton Vaughan, Jr., 1st Lieut., San Francisco.
FABER, Max, Captain, Chelsea, Mass.
FALKER, John Michael, 1st Lieut., Mount Carmel, Pa.
FAZIO, Michael George, 1st Lieut., Brooklyn.
FELDMAN, Max, 1st Lieut., Deaver, Wyo.
FIMAN, Charles Elden, 1st Lieut., Chicago.
FINKELSTEIN, Benjamin Herman, Captain, Brooklyn.
FINKELSTEIN, Paul, 1st Lieut., Brooklyn.
FISHMAN, Louis, Captain, Center, Texas.
FITZGERALD, Brice E., 1st Lieut., Indianapolis.
FLAIG, Julian Vincent, Captain, Pottsville, Pa.
FLEMING, Forest Elroy, Captain, Beverly Hills, Calif.
FLIEGELMAN, Maurice Teller, 1st Lieut., Philadelphia.
FLOYD, Cyril Franklin, Captain, Phenix City, Ala.
FLOYD, Joe Robert, Captain, El Paso, Texas.
FOGARTY, Charles James, Captain, Omaha.
FORTEZA, Resendo, Jr., 1st Lieut., Columbus, Ohio.
FOSTER, Furman Lamar, 1st Lieut., Hico, La.
FOX, Lester Irving, 1st Lieut., Quincy, Mass.
FRANCIS, Vincent D., 1st Lieut., Brooklyn.
FRANKEL, Leon Allyn, 1st Lieut., Philadelphia.
FRATIS, Anthony Morris, Jr., 1st Lieut., Marysville, Calif.
FREED, Albert Edward, 1st Lieut., Omaha.
FREEDMAN, Mark Abraham, 1st Lieut., Columbus, Ohio.
FRENCH, James Benjamin, 1st Lieut., Tacoma Park, Md.
FRIEDMAN, Harry Samuel, 1st Lieut., Minneapolis.
FULGHUM, Thomas Edward, 1st Lieut., Atlanta, Ga.
GAHM, Irvin George, 1st Lieut., Norwich, Conn.
GAMET, Joseph Hiram, Captain, Chicago.
GANSMAN, David Henry, 1st Lieut., Philadelphia.
GARCIA, Charles Todd, 1st Lieut., Wilmington, Del.
GARDNER, Wray Rodgers, Captain, El Paso, Texas.
GARTHE, John Joseph, 1st Lieut., Chicago.
GASS, Charles Craig, 1st Lieut., Fort Leavenworth, Kan.
GATTO, Lucio Ernest, 1st Lieut., Cambridge, Mass.
GENTRY, Thomas Christy, Captain, De Leon, Texas.
GERINGER, Benjamin, 1st Lieut., New York.
GESSEL, Udell Mathews, 1st Lieut., Salt Lake City.
GIEGERICH, Walter Frank, 1st Lieut., Dubuque, Iowa.
GEYER, Harry Maurice, 1st Lieut., Pittsburgh.
GHOLSEN, Sidney Norman, 1st Lieut., Waynesboro, Va.
GIBSON, Frank Eugene, 1st Lieut., Washington, D. C.
GILL, Ronald Monroe, 1st Lieut., Mason City, Wash.
GILLIAM, Robert Lindsay, Captain, Raleigh, N. C.
GILMORE, John Edwin, 1st Lieut., Fresno, Calif.
GLADSDEN, Eugene Solomon, 1st Lieut., Washington, D. C.
GLAUBMAN, William Aaron, 1st Lieut., Clinchport, Va.
GLEESON, George LaNore, 1st Lieut., Sharon, Pa.
GLICK, Herbert Dudley, Captain, McKeesport, Pa.
GLICKSMAN, Herbert Yuni, 1st Lieut., New York.
GLUCKMAN, Earl Charles, 1st Lieut., Yonkers, N. Y.
GOLD, David, 1st Lieut., Schenectady, N. Y.
GOLDBERG, Louis, 1st Lieut., Phoenixville, Pa.
GOLDEN, Alfred, 1st Lieut., Akron, Ohio.
GOLDMAN, David A., 1st Lieut., Broxton, Ga.
GOLDMAN, Irving Ralph, 1st Lieut., Milwaukee.
GOLDSMITH, Irwin Robert, Captain, Menomonie, Wis.
GOLDSMITH, Solomon, Captain, Brooklyn.
GOOD, Wealty William, 1st Lieut., San Antonio, Texas.
GORDON, Everett Julius, 1st Lieut., Washington, D. C.
GORDON, James Harrison, Captain, Philadelphia.
GRAY, Willis James, 1st Lieut., Moulton, Texas.
GRAYSON, Morris, 1st Lieut., Ozone Park, Long Island, N. Y.
GREEN, Arthur Horace, Jr., 1st Lieut., Wilkes-Barre, Pa.
GREEN, Charles Joseph, Captain, Omaha.
GREEN, George Benjamin, 1st Lieut., New York.
GREENWOOD, Lilburn Silvas, Captain, Rockford, Ill.
GRIGGS, Oscar Broughton, Captain, Philadelphia.
GROLLMAN, Jaye Jacob, 1st Lieut., Cincinnati.
GUMPORT, Stephen Lawrence, 1st Lieut., New York.
HAAS, William Reid, 1st Lieut., New Haven, Conn.
HAIGLEY, Thomas Brien, Captain, Baltimore.
HALE, Clayton H., 1st Lieut., Schenectady, N. Y.
HALLINGER, Earl Stephen, Jr., 1st Lieut., Endicott, N. Y.
HALPERIN, Louis, 1st Lieut., Denver.
HALPERIN, Meyer, 1st Lieut., Brooklyn.
HAM, George Hillery, Captain, Culver City, Calif.
HAMEL, Paul Raymond, 1st Lieut., Lebanon, N. H.
HAMM, Leslie Thompson, 1st Lieut., Oklahoma City.
HAMMATT, Harold Wayne, 1st Lieut., Chicago.
HANSELL, Robert Joseph, Captain, Philadelphia.
HANSEN, Paul George, Captain, Warrensville, Ohio.
HANSON, Lawrence Benton, Captain, Oakland, Calif.
HARMON, Kenneth Joseph, 1st Lieut., Tonawanda, N. Y.
HARPER, Edwin Oliver, Captain, Arkadelphia, Ark.
HARRIS, Frank Henry, 1st Lieut., Martin's Ferry, Ohio.
HARTLAND, William C., Captain, Crosby, Minn.
HARTMAN, Jack, 1st Lieut., Minneapolis.
HARTMAN, Owen Wister, 1st Lieut., Chambersburg, Pa.
HARVEY, Bernard Joy, 1st Lieut., Lafayette, Ind.
HARWITZ, Morris, 1st Lieut., Geary, Okla.
HAWLEY, Sherman Reward, Captain, Toledo, Ohio.
HAYDEN, Elliot Alex, 1st Lieut., New York.
HEDERICK, Rogers, 1st Lieut., Bonneville, Ark.
HEDGE, Arden Russell, 1st Lieut., San Francisco.
HEFFERNON, George Allen, Captain, Seminole, Okla.
HEGER, Frank Ferdinand, Captain, Shiner, Texas.
HEINITSH, George, 1st Lieut., Fayetteville, N. C.
HELLER, Harold, 1st Lieut., San Jose, Calif.
HELLER, Morris Isadore, 1st Lieut., Cleveland.
HENRY, Joseph Raymond, 1st Lieut., Detroit.
HENTON, George Herbert, Captain, Portland, Ore.
HERMAN, Julius, 1st Lieut., Crafton, Pa.
HERMES, Richard Lawrence, 1st Lieut., Fort Wayne, Ind.
HERNDON, Gilbert Cole, 1st Lieut., Forth Worth, Texas.
HICKS, George Yerger, Vicksburg, Miss.
HO, Kwan Heen, Captain, St. Louis.
HOFFMAN, Archie Arthur, 1st Lieut., Chelsea, Mass.
HOFFMAN, Charles Wilbur, Jr., 1st Lieut., Baltimore.
HOLDEN, Howard Thompson, 1st Lieut., Rabun Gap, Ga.
HOLLAND, Robert Mannix, 1st Lieut., West Roxbury, Mass.
HOLLINGSWORTH, Charles Edward, 1st Lieut., Chickasha, Okla.
HOLLINGSWORTH, Parker B., 1st Lieut., San Francisco.
HOLMES, Michael, Captain, Fort Moultrie, S. C.
HOMAN, James Bertolette, 1st Lieut., Philadelphia.
HOPPENSTEIN, Eugene Samuel, 1st Lieut., Los Angeles.
HORSMAN, Russell Keaten, 1st Lieut., Kokomo, Ind.
HRENOFF, Arsenay Konstantin, San Francisco.
HUBBARD, Ralph Waldo, 1st Lieut., Oklahoma City.
HUDES, Joseph, 1st Lieut., Brooklyn.
HUNT, Walter Skellie, Jr., 1st Lieut., Raleigh, N. C.
HYMAN, Daniel, 1st Lieut., Washington, D. C.
ISHAM, Charles Augustus, 1st Lieut., San Francisco.
JACOBS, Frederick Matthews, 1st Lieut., Roanoke, Va.
JACOBS, Herbert M., 1st Lieut., Cleveland.
JEWELL, James Harlan, Captain, Racine, Wis.
JOHNSON, Carroll Allen, Jr., 1st Lieut., Marfa, Texas.
JOHNSON, Cyrus Cleveland, 1st Lieut., Greensville, Miss.
JOHNSTON, Edward Estill, Captain, South Bend, Ind.
JUSTER, Milton Alter, Captain, Washington, D. C.
JUSTICE, Frank K., Captain, Fort Benning, Ga.
KABAKER, Charles Bernard, 1st Lieut., Lexington, Ky.
KAFKA, Adolph Joseph, 1st Lieut., Scotia, Neb.
KAFKA, M. Martyn, Captain, Brooklyn.
KAMESIS, John Joseph, 1st Lieut., Cleveland.
KANNER, Morris, 1st Lieut., Brooklyn.
KAPLAN, Albert Jordon, 1st Lieut., Philadelphia.
KAPLAN, Ronald R., 1st Lieut., Cleveland Heights, Ohio.
KAREL, Jack R., Captain, Tacoma, Wash.
KASSAN, Robert Jacob, 1st Lieut., Washington, D. C.
KAUFMAN, Abraham Saul, 1st Lieut., Philadelphia.
KAYNE, Jerry, 1st Lieut., Chicago.
KELLY, Miles William, 1st Lieut., New York.
KELLY, Sylvester Meehan, 1st Lieut., Chicago.
KELSEY, Richard Forrest, 1st Lieut., Fort Benning, Ga.
KEMP, Milton, 1st Lieut., Brooklyn.
KENT, Clifford Foster, Captain, Kansas City, Kan.
KETCHUM, Walter Harris, 1st Lieut., Forsyth, Ga.
KIDD, Eugene Linwood, 1st Lieut., Seattle.
KING, James Thomas, 1st Lieut., Valdosta, Ga.
KISNER, Paul, Captain, Fort Snelling, Minn.
KNAUF, George Milton, 1st Lieut., Rising Sun, Md.
KNECHT, Edward M., 1st Lieut., Philadelphia.
KNESE, Luke Ambrose, Captain, Billings, Mont.
KOEBERT, Martin Joseph, 1st Lieut., Philadelphia.
KOSTECKI, Walter Andrew, 1st Lieut., South Hanson, Mass.
KRIEGER, Howard Gottlieb, 1st Lieut., Schenectady, N. Y.
KROSNICK, Gerald, 1st Lieut., New Haven, Conn.
KUHN, John J., 1st Lieut., Washington, D. C.
KLAUBER, Samuel, 1st Lieut., Cambridge, Mass.
KRAJESKI, Delphin Stanley, 1st Lieut., Wilkes-Barre, Pa.
LACKAY, Raleigh Howard, 1st Lieut., Fayetteville, N. C.
LAMAR, Robert Frederick, 1st Lieut., Kansas City, Mo.
LAMY, John Ernst, 1st Lieut., Sedalia, Mo.
LARAWAY, Thurston William, Captain, Vancouver, Wash.
LASNER, Jack, 1st Lieut., Brooklyn.
LAUER, David Patrick, 1st Lieut., Chicago.
LAWLOR, John Martin, 1st Lieut., Philadelphia.
LEE, Albert Ray, 1st Lieut., Tylertown, Miss.
LEE, Jack Bennett, 1st Lieut., Dallas, Texas.
LEE, Walter Jerome, Jr., 1st Lieut., Hot Springs National Park, Ark.
LEVINS, Leo Victor, 1st Lieut., Brookline, Mass.
LEVISOHN, Milton Jack, 1st Lieut., Chicago.
LIDE, Thomas Norwood, 1st Lieut., Washington, D. C.
LEIBOWITZ, Hyman, 1st Lieut., Brooklyn.
LEICHTER, Martin, 1st Lieut., Los Angeles.
LENTINI, Vincent, Captain, Shively, Ky.
LERNER, Philip, 1st Lieut., Chicago.
LIND, Carl John, Jr., Captain, South Minneapolis, Minn.
LIPMAN, Bernard Lewis, 1st Lieut., Philadelphia.
LIPPMAN, Nathan Louis, 1st Lieut., Atlantic City, N. J.
LITTLETON, William Henry, 1st Lieut., Estes Park, Colo.
LOCHEN, Everette Lee, Captain, Waukesha, Wis.
LONG, Gerald A., 1st Lieut., Arlington, Va.
LORANGER, Guy Lincoln, 1st Lieut., Detroit.
LOUDON, James Deloss, 1st Lieut., Omaha.
LOVEBURY, William Frederick, 1st Lieut., Columbus, Ohio.
LOVELACE, George M., 1st Lieut., Big Horn, Wyo.
LOVRE, Stanton Clifford, 1st Lieut., Humboldt, S. D.
LOWREY, Robert Wayne, 1st Lieut., Poteau, Okla.
LUEDDE, Fullerton Woods, 1st Lieut., St. Louis.
LUKAS, John Robert, 1st Lieut., Leupp, Ariz.
LUKE, Edward Albert, 1st Lieut., Redding, Calif.
LUPARELLO, Thomas Gaetano, Captain, Denver.
LURIA, Sydney, 1st Lieut., Ansonia, Conn.
LYDAY, Wilson, 1st Lieut., Brevard, N. C.
LYMAN, Irving Richard, 1st Lieut., Fort Worth, Texas.
LYONS, Robert Edward, 1st Lieut., Sequin, Texas.
McANALLY, William Jefferson, Jr., 1st Lieut., High Point, N. C.
McCARROLL, William Harold, 1st Lieut., San Antonio, Texas.
McCARTY, William Joseph, Captain, Yerington, Nev.

McCLINTOCK, John Laughlin, 1st Lieut., Philadelphia.
McCOY, States Donald, Captain, Columbus, Ohio.
McCREADY, Robert Bruce, 1st Lieut., Chicago.
McDERMOTT, Robert West, 1st Lieut., Munhall, Pa.
McDONOUGH, Joseph Francis, 1st Lieut., Palo Alto, Calif.
McDOWELL, James Frederick, Captain, Birmingham, Ala.
McGRAW, John Phillip, 1st Lieut., Estes Park, Colo.
McGUINNESS, Joseph Stanley, 1st Lieut., San Francisco.
McHALE, Donald Gareth, 1st Lieut., Miami, Fla.
McKEE, Robert Doreck, 1st Lieut., San Antonio, Texas.
McKISSICK, John Campbell, Captain, Paris, Tenn.
McMANUS, James William, Jr., Captain, Laurel, Md.
McQUEEN, Max Boyd, Captain, Lewiston, Ida.
McREE, Walter Everett, 1st Lieut., Port Arthur, Texas.
MACK, Joseph John, Captain, Little Rock, Ark.
MADOFF, Irving, Captain, New York.
MAGUDA, Thomas Andrew, 1st Lieut., Sheatown, Pa.
MAKOVSKY, Irwin Harry, Captain, St. Louis.
MANGIMELLI, Samuel Thomas, 1st Lieut., Omaha.
MANNING, John Gilbert, 1st Lieut., Los Angeles.
MARESH, Gerald Stanley, 1st Lieut., Iowa City.
MARINACCI, Albert Antonio, 1st Lieut., Los Angeles.
MARKER, Daniel Isaac, Captain, Manhattan, Kan.
MARKS, Maurice Isaac, Jr., 1st Lieut., Atlanta, Ga.
MARROCCO, William Alexander, Captain, Paterson, N. J.
MARSICO, John, 1st Lieut., Lorain, Ohio.
MARTIN, Farris James, 1st Lieut., Montgomery, Ala.
MARTIN, Richard Dorr, 1st Lieut., Detroit.
MASLER, Sherman, 1st Lieut., Van Nuys, Calif.
MASCARO, Joseph Raymond, Captain, Utica, N. Y.
MASON, David, 1st Lieut., Lewiston, Ida.
MATTHIS, Austin Wood, Captain, Darrouzett, Texas.
MAUPIN, Clinton Shockey, 1st Lieut., Waurika, Okla.
MELANCON, Joseph Francis, 1st Lieut., St. Paul.
MENCHER, Edward Wallace, 1st Lieut., New York.
MERMIS, William Leo, Captain, Centaur Station, Mo.
MESSINA, Domenic Sebastian, 1st Lieut., Buffalo.
MEYER, Morton Arthur, 1st Lieut., San Francisco.
MICKEL, Arthur Adams, 1st Lieut., Lomita, Calif.
MILFORD, Albert Findley, 1st Lieut., Ann Arbor, Mich.
MILLER, Jack Eaton, 1st Lieut., Oklahoma City.
MILLER, Lee Edward, 1st Lieut., Milwaukee.
MILTON, Paul Harold, Captain, Decatur, Ga.
MIRSKY, Louis Halliday, 1st Lieut., Brooklyn.
MONTGOMERY, John Willard, 1st Lieut., Pasadena, Calif.
MITCHELL, Robert Hiestand, 1st Lieut., Chicago.
MOONEY, Alfonso John, Jr., 1st Lieut., Statesboro, Ga.
MOORE, Chester Garfield, Jr., 1st Lieut., San Francisco.
MORROW, Charles Sol., 1st Lieut., Newark, N. J.
MOORE, William Andrew, Captain, Olney, Ill.
MOORE, William Sivley, 1st Lieut., Memphis, Tenn.
MORGAN, Jack Albert, Captain, Elgin, Ill.
MORRISON, Marcus Eugene, 1st Lieut., Oxford, Miss.
MOUNCE, Chanceford Afton, 1st Lieut., Lynwood, Calif.
MOYER, Leonard Byron, Captain, Carson, N. D.
MOZERSKY, Victor, 1st Lieut., San Antonio, Texas.
MUCKLE, Craig Wright, Captain, Haverford, Pa.
MULFORD, Todd Merriam, 1st Lieut., Los Angeles.
MUNDT, Raymond, Captain, Juneau, Alaska.
MURPHY, John Thomas, 1st Lieut., Green Bay, Wis.
NABBE, Philip Morris, 1st Lieut., Chicago.
NAGLER, J. Herbert, 1st Lieut., Philadelphia.
NEBINGER, Rankin Arthur, Captain, Lexington, Miss.
NELSON, Robert Burwell, Jr., 1st Lieut., Winchester, Va.
NEIDICH, Sol, 1st Lieut., Beauford, S. C.
NETHERY, Sidney J., Jr., 1st Lieut., Belle Mina, Ala.
NEURWIRTH, Abraham A., Captain, Floral Park, Long Island, N. Y.
NEWTON, William Howard, Captain, Chicago.
NICOLETTE, Anthony Joseph, 1st Lieut., Mount Pleasant, Pa.
NICOSIA, Ralph Vincent, 1st Lieut., Houston, Texas.
NIXON, Pat Ireland, Jr., 1st Lieut., Washington, D. C.
NOELL, Livingston Pope, Jr., 1st Lieut., New Orleans.
NORMAN, Earle Theodore, Captain, Uvalde, Texas.
NORTHOP, Richard Francis, 1st Lieut., Philadelphia.
NOVAK, Theodore William, Captain, Columbus, Ohio.
OAKES, Harold Forest, 1st Lieut., El Paso, Texas.
O'BRIEN, Frederick F., 1st Lieut., Cambridge, Mass.
ONDASH, Stephen William, 1st Lieut., Youngstown, Ohio.
O'NEILL, Francis Edward, 1st Lieut., Sanderson, Texas.
OPSAHL, Harold Eugene, Captain, Washington, D. C.
ORTMAN, Gareth Spencer, 1st Lieut., Otego, Kan.
PAPKIN, George, 1st Lieut., Los Angeles.
PARKE, Delmar Davis, Captain, Indianapolis.
PARKER, David Marcellus, Captain, Oakland, Calif.
PARKS, Harold Darby, Major, Lancaster, Texas.
PATTERSON, Fred Lindley, Jr., 1st Lieut., Mountain View, Okla.
PATTON, Thomas Ewing, 1st Lieut., North Jackson, Ohio.
PAYNE, Royal Chester, Captain, Hollywood, Calif.
PEARSON, Paul Ernest, 1st Lieut., Kansas City, Mo.
PEDERSEN, Paul Milton, 1st Lieut., Oakland, Calif.
PERRI, Frank Adrian, 1st Lieut., Philadelphia.
PETERSEN, Fenton Joseph, 1st Lieut., Richmond Heights, Mo.
PETERSON, Wendell Case, 1st Lieut., Fairbury, Neb.
PIERCE, Richard Kenneth, Captain, San Francisco.
PIGFORD, Charles Alfred, Captain, Tulsa, Okla.
PITTMAN, Cole Dilling, Captain, Tulsa, Okla.
PITTMAN, Wayne Creekmore, Captain, Bay St. Louis, Miss.
PLESSINGER, Virgil Allen, 1st Lieut., Washington, D. C.
PLETCHER, Kenneth Eugene, 1st Lieut., Eldon, Mo.
POHLMAN, David A., Captain, Pasadena, Calif.
POLLACK, David, 1st Lieut., Columbus, Ohio.
POPELAR, Melville Valerian, Captain, Omaha.
POSNER, Sidney, 1st Lieut., Robstown, Texas.
POTTER, George Vernon, 1st Lieut., Oakland, Calif.
POWERS, Francis Irving, 1st Lieut., Glendora, Calif.
PRATT, George Olin, Captain, Richford, Vt.
PRATT, Harold Ernst, 1st Lieut., San Pedro, Calif.
PRATT, William Coleman, 1st Lieut., Danville, Pa.
PROCTOR, Clark Bartlett, Captain, Ames, Iowa.
PUSHKIN, E. Aaron, 1st Lieut., West Hempstead, N. Y.
PREWITT, John Hanna, 1st Lieut., Lexington, Ky.
PRIOR, Frank H., Captain, Colorado Springs, Colo.
PUZISS, Abe, 1st Lieut., Portland, Ore.
QUINE, Robert Corkill, Captain, San Diego, Calif.
RABINOWITZ, Carl Hirsch, 1st Lieut., New Orleans.
RABOURN, William Ossian, Captain, Port Byron, N. Y.
RADLOFF, Frederick F., 1st Lieut., Spokane, Wash.
RADIVOJEVIC, Sava Mathew, 1st. Lieut., Portland, Ore.
RAFFEL, William, 1st Lieut., Washington, D. C.
RADZYMINSKI, Stanislas Francis, 1st Lieut., Chicago.
RATE, Robert Goodwin, 1st Lieut., Santa Barbara, Calif.
RAY, Louis, 1st Lieut., Tule Lake, Calif.
RAYMOND, Frank Kondziorski, 1st Lieut., Chicago.
READINGER, Ivan Henry, 1st Lieut., El Paso, Texas.
RECUPERO, Joseph Rocco, 1st Lieut., Brooklyn.
REIGER, John Leslie, 1st Lieut., Craig, Colo.
REISMAN, Samuel Gearson, 1st Lieut., Detroit.
REISSMAN, Seymour, 1st Lieut., Brooklyn.
REYNOLDS, Francis Henry, 1st Lieut., Columbus, N. M.
RHYNE, Walter Percival, Captain, Albany, Ga.
RICHARDS, Lewis Jones, 1st Lieut., Mobile, Ala.
RICHMOND, Van Rensselaer, 1st Lieut., Welfare Island, N. Y.
RICKER, Walter Albra, Jr., 1st Lieut., Wauwatosa, Wis.
RITTER, Morton David, 1st Lieut., Atlantic City, N. J.
RIVA, Humbert Lewis, 1st Lieut., Charleroi, Pa.
ROADMAN, Charles Harvey, 1st Lieut., Dallas, Texas.
ROBBINS, Ben, 1st Lieut., Pittsburgh.
ROBINSON, Murry Myer, Captain, Washington, D. C.
ROBINSON, Howard, 1st Lieut., Wayne, Mich.
ROGOFF, Bernard, 1st Lieut., Ozone Park, N. Y.
ROOTH, Sydney Sigmund, 1st Lieut., Chicago.
ROSANOVA, Albert Ralph, 1st Lieut., Chicago.
ROSE, Joseph, Captain, Jacksonville, Fla.
ROSEN, Samuel Clarence, 1st Lieut., Philadelphia.
ROSENSTEIN, Samuel William, 1st Lieut., Brooklyn.
ROSS, James Keener, 1st Lieut., Salisbury, Md.
ROSS, Samuel, Captain, San Francisco.
ROUSE, James William Harlow, Captain, San Antonio, Texas.
ROTHSTEIN, Martin Mayer, 1st Lieut., Philadelphia.
ROWELL, Forrest Ardell, Jr., 1st Lieut., Boston.
RUBIN, Herschel Jerome, 1st Lieut., Tulsa, Okla.
RUBIN, Myron Michael, 1st Lieut., Brooklyn.
RUBIN, Nathan Samuel, Captain, Pensacola, Fla.
RULNEY, Max, Captain, New York.
RUSSELL, Blanton Everett, 1st Lieut., Clinton, Ky.
RUSSO, Joseph John, Captain, Albany, N. Y.
RUSS, Stirling Everett, 1st Lieut., San Antonio, Texas.
SACHS, Maurice David, 1st Lieut., San Francisco.
SAFFRON, Morris Harold, Captain, Passaic, N. J.
SALIBA, Nicholas Saloom, 1st Lieut., Walsenburg, Colo.
SANDERS, Preston Randolph, 1st Lieut., Big Springs, Texas.
SANDERS, Zal Hyman, 1st Lieut., Rock Island, Ill.
SANDY, William Allee, Captain, Indianapolis.
SANJURJO RAMIREZ, Louis Arturo, 1st Lieut., Santurce, P. R.
SANTANIELLO, William Michael, 1st Lieut., Brooklyn.
SARKISSIAN, Sarkis Der, Captain, Chicago.
SAUNDERS, Irvine, 1st Lieut., Bedford, Va.
SCHAM, Manuel Joseph, Captain, Bronx, N. Y.
SCHAUMLOFFEL, Roland Abraham, 1st Lieut., Los Angeles.
SCHIFF, Bencel Leib, 1st Lieut., Philadelphia.
SCHILDHAUS, Andrew Irving Ephriam, 1st Lieut., Shelburne, Vt.
SCHINDLER, Meyer, 1st Lieut., San Francisco.
SCHIOWITZ, Albert, 1st Lieut., Wilkes-Barre, Pa.
SCHLESINGER, Henry A., 1st Lieut., Brooklyn.
SCHNABEL, Garfield Pickering, Captain, Phoenix, Ariz.
SCHNEIDER, Louis W., Captain, University City, Mo.
SCHNELLER, Oscar, 1st Lieut., Woodside, Long Island, N. Y.
SCHNUR, Sidney, 1st Lieut., Houston, Texas.
SCHULTZ, John Martin, Captain, West New York, N. J.
SCHULTZ, Samuel Karl, Captain, Lewistown, Pa.
SCHUMACHER, George Otto, 1st Lieut., Loma Linda, Calif.
SCHUTZ, Joe Dulaney, 1st Lieut., San Antonio, Texas.
SCHWALBE, Nathan Alter, 1st Lieut., Brooklyn.
SCHWARTZ, Edward Norton, 1st Lieut., St. Louis.
SEGAL, Robert, 1st Lieut., Lompoc, Calif.
SEIBLY, Robert Chester, 1st Lieut., Los Angeles.
SELKOVITS, Sidney Cecil, 1st Lieut., Aliquippa, Pa.
SELSER, Richard Elijah, Captain, New Orleans.
SERON, Zaven M., Captain, Sebring, Fla.
SHEPHERD, Eugene Bowie, 1st Lieut., Richmond, Va.
SIBLEY, D. Jacobi, Jr., 1st Lieut., Fort Stockton, Texas.
SIEGEL, Sidney James, 1st Lieut., Brooklyn.
SILVER, Michael William, 1st Lieut., Paterson, N. J.
SIMMANG, Arthur Vincent, 1st Lieut., San Antonio, Texas.
SIMON, Charles, 1st Lieut., Brooklyn.
SIMON, Sylvan William, Major, Chicago.
SIMONSON, Sigwert Wallace, 1st Lieut., Dallas, Wis.
SIRKEN, Joseph Grover, 1st Lieut., Philadelphia.
SIXBURY, Carl Ellwood, Captain, Des Moines, Iowa.
SKOW, George Dominico, 1st Lieut., Racine, Wis.
SMITH, Emmett Montgomery, Captain, Dallas, Texas.
SMITH, George Lafayette, 1st Lieut., Decherd, Tenn.
SMITH, Norvin Richards, 1st Lieut., Big Springs, Neb.
SMITH, Tom Jerry, 1st Lieut., Covington, Ky.
SMOLENS, Nathan Morris, Captain, Philadelphia.
SMYKA, Edward Joseph, 1st Lieut., Detroit.
SOHM, John Joseph, 1st Lieut., Memphis, Tenn.
SOHMER, Abram, 1st Lieut., Jamaica, N. Y.
SOLTZ, Gustav Deane, 1st Lieut., Denver.
SPANGLER, Edward Louis, 1st Lieut., Ouray, Colo.
SPENCER, Jacob John, Major, St. Augustine, Fla.
SPENCER, James Devore, 1st Lieut., Somerset, Pa.

SPIERER, Eugene, 1st Lieut., Chicago.
SPUNT, Edward Theodore, Captain, Bronx, N. Y.
STAATS, Roydice, 1st Lieut., Cairo, W. Va.
STAPP, Celso C., 1st Lieut., Burnet, Texas.
STARK, Ray Gingles, 1st Lieut., Kirksey, Ky.
STARK, Walter Alfred, Captain, Las Vegas, N. M.
STARR, Wilmer Hyatt, 1st Lieut., Hollywood, Calif.
STEARNS, Horace Ivan, 1st Lieut., Los Angeles.
STEELE, Virgil Shellnut, 1st Lieut., San Antonio, Texas.
STEGEMAN, Abraham Mannes, Captain, Tripoli, Iowa.
STEIN, Ben, 1st Lieut., Ennis, Texas.
STEVENS, Weir Cloyd, 1st Lieut., Los Angeles.
STILLINGER, Cecil George, Captain, Columbus, Ohio.
STINE, George Thomas, 1st Lieut., East Point, Ga.
STONE, Fred D., Captain, Chicago.
STONE, Vean Melford, 1st Lieut., Fort Lewis, Wash.
STORCH, Sidney, 1st Lieut., Brooklyn.
STRAND, Clarence Johnson, Captain, Amherst, Neb.
SULLIVAN, Frederick J., 1st Lieut., Fall River, Mass.
SUMNER, Albert, 1st Lieut., Chicago.
SUTLEY, Percy Hall, 1st Lieut., Baltimore.
SUTTON, James Alva, 1st Lieut., Avonmore, Pa.
SWAN, Joseph Jasper, 1st Lieut., Fort Worth, Texas.
SWANSON, Wendell F., Captain, Knoxville, Tenn.
SWEELEY, William Jennings, Captain, Jacksonville, Fla.
SWENSON, Orrin Endre, 1st Lieut., Stoughton, Wis.
SYDOW, Henry, 1st Lieut., Omaha.
SNISCAK, John Michael, 1st Lieut., Philadelphia.
SPRITZLER, Ramon Joseph, 1st Lieut., Philadelphia.
TARPLEE, Scott LaRue, Captain, Atlanta, Ga.
TASCARELLA, James William, 1st Lieut., Brooklyn.
TAVARES, Clement Adams, 1st Lieut., Los Angeles.
TAX, Archie Hanwit, Captain, Milwaukee.
TAYLOR, Owen Hobson, Jr., Captain, Ridgley, Tenn.
THOMAS, David P., 1st Lieut., Elmhurst, Pa.
THOMAS, Henry S., 1st Lieut., Santa Cruz, Calif.
THOMPSON, Marvin Loughran, 1st Lieut., Davenport, N. Y.
THONE, Frank Henry, 1st Lieut., Murray, Utah.
THORNER, Melvin Wilfred, Captain, Philadelphia.
TOBIN, William James, 1st Lieut., Charleston, S. C.
TODD, Hobart Hare, Jr., 1st Lieut., Oak Park, Ill.
TODOROVIC, Dragutin D., Captain, Macdoel, Calif.
TOMPKINS, Harold Phillip, 1st Lieut., Santa Barbara, Calif.
TOWNSEND, Frank Marion, 1st Lieut., New York.
TRACY, Herbert Allen, 1st Lieut., Neodesha, Kan.
TROBOUGH, George Eugene, 1st Lieut., Omaha.
TUTTLE, Jay Forrester, 1st Lieut., Bremerton, Wash.
VANDIVIERE, Stuart Pitner, Captain, Dawsonville, Ga.
VAN MATRE, Reber Miller, Captain, Walters, Okla.
VANNETER, James Clyde, Captain, Columbus, Ohio.
VERSTANDIG, Charles Coleman, 1st Lieut., East Boston, Mass.
VICKERS, James Edmund, 1st Lieut., San Bernardino, Calif.
VIDA, Alexander, 1st Lieut., Detroit.
VOGEL, Louis Alfred, Captain, Glandorf, Ohio.
VOTAW, Frederick Lee, 1st Lieut., Pittsburgh.
WADDELL, Otto Joseph, Jr., 1st Lieut., Dallas, Texas.
WAGGONER, Harry Nelson, 1st Lieut., Dyersburg, Tenn.
WAINER, Amos Shepherd, 1st Lieut., Philadelphia.
WALKER, Weldon Joseph, 1st Lieut., Los Angeles.
WALL, Malcolm Musgrave, 1st Lieut., Washington, D. C.
WARD, Aaron Cleveland, Captain, Calhoun Falls, S. C.
WARNER, Frank Amel, Captain, Baltimore.
WALBRIGHT, George W., 1st Lieut., Escanaba, Mich.
WASHKO, Peter John, 1st Lieut., Edwardsville, Pa.
WATT, James Andrew, 1st Lieut., Columbus, Miss.
WEBER, John Martin, 1st Lieut., New Rochelle, N. Y.
WEHS, Richard John, Captain, Washington, D. C.
WEISS, Samuel Aaron, Captain, Denver.
WENNERSTEIN, Jack Ralph, 1st Lieut., Pottstown, Pa.
WENTWORTH, John Hall, 1st Lieut., New Haven, Conn.
WEST, Jasper Daniel, Captain, Memphis, Tenn.
WEAVER, Emerson M. F., Captain, Lancaster, Pa.
WIELAND, Wesley William, 1st Lieut., Virginia Beach, Va.
WHITE, Raymond Leroy, 1st Lieut., New Plymouth, Ida.
WESTCOTT, Albert Goodwin, 1st Lieut., San Francisco.
WHISTLER, Carl William, 1st Lieut., El Paso, Texas.
WHITCOMB, Luther Myron, 1st Lieut., Carlisle, Pa.
WHITE, Edgar William, Lieut.-Colonel., New York.
WHITE, Fletcher Howard, 1st Lieut., Burlington, Vt.
WHITE, Gilbert William, Captain, East Prospect, Pa.
WHITE, Thomas Beeman, 1st Lieut., Plain Dealing, La.
WHITMAN, Joseph Jay, Captain, Cleveland.
WHITMER, Lysle Henderson, 1st Lieut., Wilton Junction, Iowa.
WILLIAMS, John Wyley, Captain, Oak Grove, Mo.
WILLIAMS, Russel I., 1st Lieut., Lincoln, Neb.
WILLIGER, Irwin Fox, 1st Lieut., South Harriman, Tenn.
WINGFIELD, William Lynn, 1st Lieut., Ashland, Va.
WOLF, Nathan, 1st Lieut., Baltimore.
WOLFE, Herbert S., Captain, New York.
WONG, James Sin Fook, Captain, Philadelphia.
WRIGHT, Burchard Eakin, Jr., Captain, Philadelphia.
WRIGHT, Garland Miller, 1st Lieut., Harrisonburg, Va.
WRIGHT, Jack McClellan, 1st Lieut., Stillwater, Okla.
WRIGHT, Thomas Rogers, 1st Lieut., El Paso, Texas.
WYLIE, John Thomas, Captain, Dallas, Texas.
YACHNIN, Samuel Cyril, Captain, Lyndhurst, N. J.
YOUNG, Charles Oran, 1st Lieut., San Pedro, Calif.
YOUNG, Richard Wallace, 1st Lieut., Baton Rouge, La.
YOVAISH, Walter, Captain, Germfask, Mich.
ZEFF, Charles, 1st Lieut., New York.
ZOX, Maurice Levi, 1st Lieut., Philadelphia.
ZWEIBEL, Leonard, 1st Lieut., Newark, N. J.

FIRST CORPS AREA

The following medical reserve corps officers had been ordered to extended active duty with the regular army by First Corps Area Orders since November 8 and up to midnight, November 16. The First Corps Area comprises the states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont:

ALLMAN, Sydney J., 1st Lieut., Mattapan, Mass.
FAGONE, Francis A., 1st Lieut., Portland, Maine.
FAMULARO, Nicholas A., Lieut., Jackman, Maine.
GORMAN, Richard J., Lieut., Winchendon, Mass.
HEELS, George E., Lieut., Cambridge, Mass.
NELSON, John A., Lieut., Augusta, Maine.
SHERMAN, Bernard I., Captain, Providence, R. I.
SHUMAN, Harold I., 1st Lieut., Brookline, Mass.
WILLSON, Allan T., Lieut., Farmington, N. H.

FOURTH CORPS AREA

The following medical reserve corps officers have been ordered to active duty by Fourth Corps Area Order since November 8. The Fourth Corps Area comprises the states of Tennessee, North Carolina, South Carolina, Alabama, Georgia, Mississippi, Florida and Louisiana.

ABRAM, Lewis E., 1st Lieut., Fitzgerald, Ga.
ARNOLD, Laurie J., Jr., 1st Lieut., Lake City, Fla.
ARP, Charles R., 1st Lieut., Atlanta, Ga.
ARTEAGA, Oliver, 1st Lieut., Atlanta, Ga., Camp Blanding, Fla.
BARFIELD, Hugh H., 1st Lieut., Atlanta, Ga.
BARNWELL, Edward H., Lieut. Col., Charleston County, S. C.
BERRY, John L., Captain, Miami, Fla., Savannah A. A. Firing Center, Savannah, Ga.
BICHARD, Phillip M., 1st Lieut., Orlando, Fla.
BLEICH, Jack K., Captain, Atlanta, Ga.
BUCKLEY, Madison H., 1st Lieut., Martin, Tenn., Camp Peay, Tullahoma, Tenn.
BURGE, Julius C., Jr., 1st Lieut., Black Mountain, N. C., Camp Peay, Tullahoma, Tenn.
CASTELLOW, William F., Captain, Americus, Ga.
CHEW, Nathaniel J., 1st Lieut., Bristol, Tenn.
COLLINS, Braswell E., 1st Lieut., Waycross, Ga., Camp Blanding, Fla.
CONNOR, John M., 1st Lieut., Panama City, Fla., Camp Blanding, Fla.
DUCKWELL, Fred M., 1st Lieut., Kingsport, Tenn.
EDELSON, Edmond K., 1st Lieut., New Orleans.
FARRAR, Turley, 1st Lieut., Memphis, Tenn.
FITZGERALD, Charles E., 1st Lieut., Farmville, N. C., Camp Beauregard, La.
GEESLIN, Lawrence E., 1st Lieut., Atlanta, Ga.
HALLOWAY, Charles E., 1st Lieut., Atlanta, Ga.
HARRELL, Henry L., Captain, Ocala, Fla.
HARRISON, Albertus F., 1st Lieut., Florence, S. C., Savannah A. A. Firing Center, Savannah, Ga.
HOLLIDAY, Henry C., 1st Lieut., Athens, Ga.
HOUSTON, John L., 1st Lieut., Memphis, Tenn.
KENNEDY, Leon T., Captain, Winston-Salem, N. C.
KRONRAD, Lorenz, 1st Lieut., Columbia, S. C., Camp Beauregard, La.
LEVY, Tracy, 1st Lieut., New Orleans, Savannah A. A. Firing Center, Savannah, Ga.
MASON, George S., 1st Lieut., Lumberton, Miss.
McCORD, William M., 1st Lieut., New Orleans, Camp Beauregard, La.
McCRAVEY, Augustus, 1st Lieut., Whitestone, Ga.
McNABB, John T., 1st Lieut., Whitwell, Tenn., Savannah A. A. Firing Center, Savannah, Ga.
MUSE, William S., 1st Lieut., Knoxville, Tenn.
OWENS, Bennett G., Major, Valdosta, Ga., State Headquarters Selective Service, Altanta, Ga.
PALMER, Clarence B., 1st Lieut., Covington, Ga.
PREAS, William G., Captain, Johnson City, Tenn.
ROBERTS, Louis C., 1st Lieut., Durham, N. C., Camp Peay, Tullahoma, Tenn.
SAMS, Frank H., 1st Lieut., Reynolds, Ga.
SAUNDERS, Joseph H., 1st Lieut., New Orleans, Meridian, Miss.
SELIGMAN, Ewing, Captain, Nashville, Tenn., Camp Shelby, Miss.
SIMS, Murphy M., 1st Lieut., Oxford, Miss., Camp Blanding, Fla.
SMITH, Phillip D., 1st Lieut., Knoxville, Tenn, Camp Shelby, Miss.
STATON, Leon R., 1st Lieut., Hayesville, N. C.
STOVALL, James T., Jr., 1st Lieut., Jefferson, Ga.
STROHMENGER, Frank J., 1st Lieut., Kingsport, Tenn.
SULLIVAN, Francis M., 1st Lieut., Atlanta, Ga., Fort Benning, Ga.
THARP, George W., Jr., 1st Lieut., Knoxville, Tenn., Fort McClellan, Ala.
WEINER, Harry, Captain, Birmingham, Ala., Camp Peay, Tullahoma, Tenn.
WEINSTEIN, Alfred A., Captain, Atlanta, Ga.
WYLIE, Paul E., 1st Lieut., Bemis, Tenn., Camp Peay, Tullahoma, Tenn.

YOUNG, John J., 1st Lieut., Natchitoches, La., Camp Shelby, Miss.
YUCKMAN, William, 1st Lieut., Quitman, Ga., Savannah A. A. Firing Center, Savannah, Ga.
ZIEMAN, Alphonse H., 1st Lieut., Mobile, Ala., Camp Beauregard, La.

Orders Revoked

Orders have been revoked on the following named officers reported in previous report:

CARNEY, Henry M., Captain, Nashville, Tenn., Savannah A. A. Firing Center, Savannah, Ga.
CRAIGHEAD, Claude C., 1st Lieut., Athens, La., Camp Blanding, Fla.
McCLARY, George R., 1st Lieut., Miami, Fla., Camp Peay, Tenn.
RAY, Emmett B., 1st Lieut., Kosciusko, Miss.
WEBB, John K., 1st Lieut., Columbia, S. C., 4th Division, Fort Benning, Ga.
WILLIEN, Leon J., Captain, Knoxville, Tenn.

Orders Changed

Changes have been made in the station or effective date of orders in the following named officers:

PHILLIPS, James R., 1st Lieut., Baton Rouge, La., Camp Beauregard, La.
SCOTT, Wood H., 1st Lieut., Bonita, La., Fort McClellan, Ala.
WARSHAUER, Samuel E., 1st Lieut., Wilmington, N. C., Camp Shelby, Miss.

FIFTH CORPS AREA

The following medical reserve corps officers had been ordered to active duty by the Fifth Corps Area Order up to and including midnight, November 8. The Fifth Corps Area comprises the states of Ohio, Indiana, Kentucky and West Virginia:

ALLEN, Chester H., Captain, Portsmouth, Ohio.
ARCHER, Maurice C., 1st Lieut., Medina, Ohio.
AYERS, Lloyd R., Captain, Beckley, W. Va.
BARNHART, John W., 1st Lieut., Clendenin, W. Va.
BAUHOF, Ned F., 1st Lieut., Canton, Ohio.
BEDINGER, Francis E., 1st Lieut., Walton, Ky.
BLOOMER, Richard S., 1st Lieut., Rockville, Ind.
BONNELL, George H., Jr., 1st Lieut., Worthington, Ohio.
BOOHER, Norman R., 1st Lieut., Indianapolis.
BOWSHER, Robert E., 1st Lieut., Toledo, Ohio.
CARSON, James H., Captain, Martins Ferry, Ohio.
COLBERT, Morgan R., 1st Lieut., Louisville, Ky.
CONRAD, Harold A., Captain, Elkins, W. Va.
CELLIO, Lewis W., Captain, Carrolton, Ohio.
CRANSTON, Clyde J., Captain, Wakeman, Huron County, Ohio.
DAVIDSON, William D., Captain, Evansville, Ind.
DIETL, Ernest L., 1st Lieut., South Bend, Ind.
DILLARD, Harry K., 1st Lieut., Ashland, Ky.
DORROH, Glenn U., Captain, Columbus, Ohio.
DURKEE, Melvin S., 1st Lieut., Evansville, Ind.
EISNER, David G., 1st Lieut., Cleveland.
EVERETT, Clyde W., Captain, Cleveland.
FORD, Sylvester C., 1st Lieut., Cleveland.
GEIGER, Franklyn R., 1st Lieut., Cincinnati.
GILLESPIE, Benjamin S., 1st Lieut., Tacoma, Ohio.
GITLIN, William A., 1st Lieut., Bluffton, Ind.
GRAU, Harry R., Captain, Cleveland.
GROVE, Thomas L., 1st Lieut., Huntington, W. Va.
HEWLETT, Thomas H., 1st Lieut., New Albany, Ind.
HOOVER, Reuben B., 1st Lieut., Columbus, Ohio.
KANNER, Irving F., 1st Lieut., Lexington, Ky.
KAPLAN, Ronald R., 1st Lieut., Cleveland Heights, Ohio.
KAUFFMAN, Nelson N., 1st Lieut., Indianapolis.
KILMER, John H., 1st Lieut., Fort Wayne, Ind.
LACOCK, Walter B., Captain, Columbus, Ohio.
LaMONICA, Leon L., 1st Lieut., Cleveland.
LEICHLITER, John W., Captain, Cincinnati.
LIPSCOMB, William N., Major, Lexington, Ky.
LOEB, William J., 1st Lieut., Cleveland Heights, Ohio.
LUND, Leonard C., 1st Lieut., Argos, Ind.
LYBROOK, William B., 1st Lieut., Galveston, Ind.
LYONS, Robert E., Jr., Captain, Bloomington, Ind.
LYTLE, Robert P., Captain, Cleveland.
MARCHANT, Clarence H., 1st Lieut., Bloomington, Ind.
MARCUS, Louis L., 1st Lieut., Toledo, Ohio.
MATSON, John W., 1st Lieut., Uhrichsville, Ohio.
McEWEN, James W., Captain, Terre Haute, Ind.
McLAUGHLIN, Calvin P., 1st Lieut., Pendleton, Ind.
MEILING, Richard L., 1st Lieut., Columbus, Ohio.
MISHKIN, Irving, Captain, Elkhart, Ind.
MOORE, Kenneth G., Captain, Fort Worth, Texas.
NORTHUP, Clarence E., II, 1st Lieut., Columbus, Ohio.
NOVACK, Benjamin F., 1st Lieut., East Chicago, Ind.
PEACOCK, Norman F., 1st Lieut., Crawfordsville, Ind.
PEASE, Phillip P., Captain, Chardon, Ohio.
PEBWORTH, James T., 1st Lieut., Indianapolis.
PICKAR, Daniel N., 1st Lieut., Wheeling, W. Va.
ROBBINS, James S., 1st Lieut., Mayfield, Ky.
RODENBERG, Elmer J., Captain, Columbus, Ohio.
ROUSH, Carl E., 1st Lieut., Cincinnati.
SHARP, John L., 1st Lieut., Crawfordsville, Ind.
STANLEY, John S., 1st Lieut., East Chicago, Ind.
STORER, William R., 1st Lieut., Hobart, Ind.
TEMPLETON, Ames R., 1st Lieut., South Bend, Ind.
THOMAS, Morris C., Captain, Indianapolis.
THOMPSON, Roy H., Captain, Cleveland.
TOUPKIN, Jerome H., 1st Lieut., Charleston, W. Va.
WAGENAAR, Edward H., Captain, Shipshewana, Ind.
WELCH, Brent A., 1st Lieut., Sidney, Ohio.
WIER, James A., 1st Lieut., Evansville, Ind.
WILSON, Orley E., 1st Lieut., Elkhart, Ind.

SIXTH CORPS AREA

The following additional medical reserve corps officers had been ordered to extended active duty by Sixth Corps Area Order up to November 22. The Sixth Corps Area comprises the states of Wisconsin, Illinois and Michigan.

ASKWIG, LeRoy C., 1st Lieut., Detroit.
BENNETT, Keith F., Captain, Kalamazoo, Mich.
BENNETT, Sanford A., 1st Lieut., Detroit.
DANA, Harold M., 1st Lieut., Detroit.
FITZGERALD, Maurice D., Captain, Chicago.
GAYNES, Harvey E., 1st Lieut., Chicago.
GOLDIN, Morris I., 1st Lieut., Detroit.
GORDON, Harold L., 1st Lieut., Detroit.
GREENBERG, Morris Z., 1st Lieut., Detroit.
HAUSER, Maurice J., 1st Lieut., Chicago.
HIRSCHFELD, Alexander H., 1st Lieut., Ann Arbor, Mich.
JULIAR, Benjamin, 1st Lieut., Detroit.
KENNEDY, Donald J., 1st Lieut., Detroit.
KOON, William D., 1st Lieut., Grand Rapids, Mich.
LARIMORE, Granville W., 1st Lieut., Chicago.
LASSAR, Gilbert N., 1st Lieut., Springfield.
MALLER, Adolph M., 1st Lieut., Chicago.
QUARTON, Albert E., Jr., 1st Lieut., Ann Arbor, Mich.
RYGH, Edgar A., Captain, Highland Park, Ill.
SHINGLMAN, Willard E., Captain, Cicero, Ill.
SUGARMAN, Marcus H., 1st Lieut., Detroit.
WARNKE, Robert D., 1st Lieut., Detroit.

NINTH CORPS AREA

Following are the names of medical reserve corps officers ordered to extended active duty by Ninth Corps Area Order for the week ended November 16. The Ninth Corps Area comprises the states of Washington, Montana, Wyoming, Oregon, Nevada, Utah, California and Idaho.

BANKS, Gerald F., 1st Lieut., San Diego, Calif., Presidio of Monterey, Calif.
BARNES, Norman J., 1st Lieut., Los Angeles, Fort MacArthur, Calif.
COZEN, Lewis N., Captain, Los Angeles, Fort Lewis, Wash.
DAVIS, Irving, Captain, San Francisco, Presidio of Monterey, Calif.
DONICH, George M., 1st Lieut., Butte, Mont., Fort Lewis, Wash.
GARDNER, Elsworth L., 1st Lieut., Eugene, Ore., Fort McDowell, Calif.
GOERKE, Lenor S., 1st Lieut., Woodland, Calif., With State Director of Selective Service, State of California.
GROSSBLAT, Jacob, 1st Lieut., Los Angeles, Presidio of Monterey, Calif.
HORWITZ, Emanuel, Captain, Alcatraz Island, Calif., Fort McDowell, Calif.
HUDSON, Charles B., 1st Lieut., Oakland, Calif., Presidio of Monterey, Calif.
KELTZ, Charles, 1st Lieut., Los Angeles, Presidio of Monterey, Calif.
MASON, James L., Captain, Los Angeles, Presidio of Monterey, Calif.
MITCHELL, Charles S., 1st Lieut., Fresno, Calif., Presidio of Monterey, Calif.
NAGEL, Sherman A., Jr., 1st Lieut., Los Angeles, Presidio of Monterey, Calif.
NEUGARTEN, Kurt, 1st Lieut., San Francisco, Presidio of Monterey, Calif.
PALMER, Alfred M., 1st Lieut., San Francisco, Fort Lewis, Wash.
SCHENK, Harry Leon, 1st Lieut., Los Angeles, Presidio of Monterey, Calif.
SLAUGHTER, Howard C., Major, Los Angeles, Presidio of Monterey, Calif.
SPEAKER, Other F., 1st Lieut., Glendale, Calif., Fort MacArthur, Calif.

Orders Revoked

STRANQUSIT, Henry C., Major, Ogden, Utah.

ORGANIZATION SECTION

OFFICIAL NOTES

THE CLEVELAND SESSION

Section Representatives to Scientific Exhibit

Representatives to the Scientific Exhibit have been appointed from the different sections of the Scientific Assembly as follows:

Practice of Medicine—Louis B. LaPlace, 1900 Rittenhouse Square, Philadelphia.
Surgery, General and Abdominal—Grover C. Penberthy, 1553 Woodward Avenue, Detroit.
Obstetrics and Gynecology—H. Close Hesseltine, 5841 Maryland Avenue, Chicago.
Ophthalmology—Georgiana Dvorak Theobald, 120 Medical Arts Building, Oak Park, Ill.
Laryngology, Otology and Rhinology—Fred W. Dixon, 2060 East Ninth Street, Cleveland.
Pediatrics—Arthur F. Abt, 104 South Michigan Avenue, Chicago.
Pharmacology and Therapeutics—O. P. J. Falk, 539 North Grand Boulevard, St. Louis.
Pathology and Physiology—F. W. Konzelmann, Temple University Hospital, Philadelphia.
Nervous and Mental Diseases—F. P. Moersch, 102 Second Avenue, S.W., Rochester, Minn.
Dermatology and Syphilology—Hamilton Montgomery, 102 Second Avenue, S.W., Rochester, Minn.
Preventive and Industrial Medicine and Public Health—Paul A. Davis, 1436 Delia Avenue, Akron, Ohio.
Urology—John H. Morrissey, 40 East Sixty-First Street, New York.
Orthopedic Surgery—Theodore A. Willis, 10515 Carnegie Avenue, Cleveland.
Gastro-Enterology and Proctology—Sara M. Jordan, 605 Commonwealth Avenue, Boston.
Radiology—S. W. Donaldson, 326 North Ingalls Street, Ann Arbor, Mich.
Anesthesiology—Paul M. Wood, 745 Fifth Avenue, New York.

Application blanks for space in the Scientific Exhibit at the Cleveland session may be obtained from the section representatives or from the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

American Medical Golfing Association

In 1913 Dr. Will Walter first suggested the founding of a medical golfing association to Dr. Wendell Phillips, then a trustee of the American Medical Association, who responded with an enthusiasm which continued until his death in 1934. The organization work, which fell to Dr. Walter, was completed in time for the initial tournament, which was held at the San Francisco Country Club in 1915. A tournament has been held by the golfing association during the time of the annual session of the American Medical Association each year since 1915. Following is a list of the tournaments, where they were held, the champion, and the president and vice president:

The average attendance of players at the tournaments has been about 210. Their popularity has increased until it has become necessary to select a country club which has two eighteen hole courses or to take over two courses which are adjacent to each other, as was done in Kansas City in 1936 and as will be done in Cleveland in 1941. The present membership of the golfing association is 1,610 fellows in all parts of the United States, Hawaii, Cuba and the Philippine Islands.

The 1941 tournament of the American Medical Golfing Association will be held at the Cleveland Country Club and Pepper Pike in Cleveland during the annual meeting of the American Medical Association in that city, June 2-6. This year's president of the American Medical Golfing Association, Dr. E. H. Houston of Seattle, has had a long golfing career. He has been president and captain of the largest municipal links in Seattle and a member of its board of trustees for fifteen years, and president of the golfing section of the Washington State Medical Association for the last sixteen years. He was chairman of the greens committee of one club for twenty-five consecutive years. The physicians of British Columbia and King County Medical Society, Washington, for twenty-two years have had an annual golfing tournament, and Dr. Houston has been president of the King County group. He has regularly attended the tournaments of the American Medical Golfing Association for years and already he has completed all arrangements for the next tournament of the American Medical Golfing Association.

RADIO BROADCASTS

"Doctors at Work" is the title of the sixth annual series of dramatized radio programs being presented by the American Medical Association and the National Broadcasting Company.

The series opened Wednesday, November 13, and will run for thirty consecutive weeks, closing with a broadcast from the American Medical Association meeting at Cleveland on June 3, 1941. The program is scheduled for 10:30 p. m. eastern standard time (9:30 central, 8:30 mountain, 7:30 Pacific time) over the Blue network, other N. B. C. stations and Canadian stations.

These programs are broadcast on what is known in radio as a sustaining basis; that is, the time is furnished gratis by the radio network and local stations and no revenue is derived from the programs. Therefore, local stations may or may not take the programs at their discretion, except those stations which are owned and operated by the National Broadcasting Company.

Some radio stations may be unable to broadcast the program at the regular scheduled time and may transcribe and

Tournament	Year	Club	Champion	President	Vice President
First	1915	San Francisco Country Club	James Eaves	Wendell Phillips*	Will Walter
Second	1916	Detroit Country Club	Fred Bailey	Wendell Phillips*	Will Walter
Third	1917	Garden City Golf Club, New York	A. F. Henning	Thomas Hubbard	Will Walter
Fourth	1918	Glenview Club, Chicago	F. M. Castor	Fred Bailey	Will Walter
Fifth	1919	Atlantic City Country Club	Fred Bailey	Edward Martin	Will Walter
Sixth	1920	New Orleans Country Club	A. F. Henning	Emery Marvel*	Will Walter
Seventh	1921	Common Country Club, Boston	Charlton Potter	Robert Moss	Will Walter
Eighth	1922	Glen Echo Club, St. Louis	Fred Bailey	Charlton Wallace	Will Walter
Ninth	1923	San Francisco Country Club	E. Seaforth	Will Walter	Fred Bailey
Tenth	1924	Olympia Fields, Chicago	George McKee	James Eaves	Fred Bailey
Eleventh	1925	Seaview, Atlantic City	Homer Nicoll	D. Chester Brown	Lorenzo Walter
Twelfth	1926	Dallas Country Club	S. M. Hill	Henry Cotton*	Walt Conoway
Thirteenth	1927	Columbia Country Club, Washington	George McKee	Samuel Childs	Leland Ellis
Fourteenth	1928	Minneapolis Country Club	Walter Shelden	W. D. Shelden	H. H. Kerr
Fifteenth	1929	Waverly Country Club, Portland	John Loudon	Ben Thomas*	G. J. Thomas
Sixteenth	1930	Hawthorne Country Club, Detroit	John Loudon	Walter Schaller	J. L. McCool
Seventeenth	1931	Aronimink Country Club, Philadelphia	George McKee	Edwin Zabriskie	Frank A. Kelly
Eighteenth	1932	New Orleans Country Club	S. M. Hill	Frank A. Kelly	John Welsh Croskey
Nineteenth	1933	Blue Mound Country Club, Milwaukee	Mark Bach	John W. Croskey	J. P. O'Kelley
Twentieth	1934	Mayfield Country Club, Cleveland	John Louden	Homer K. Nicoll	J. W. Powers
Twenty-first	1935	Northfield Country Club, Atlantic City	L. C. Foster	Charles Lukens	John B. Morgan
Twenty-second	1936	Mission Hills and Kansas City Country Club	Roy E. Emanuel	M. M. Cullom	Walt P. Conoway
Twenty-third	1937	Seaview Country Club, Atlantic City	W. J. VanWie	W. Albert Cook	Clarence Capell
Twenty-fourth	1938	San Francisco Golf and Country Club	J. A. Marek	Walt P. Conaway	George W. Hall
Twenty-fifth	1939	Norwood Hills Country Club, St. Louis	Duke R. Gaskins	E. S. Edgerton	James W. Morgan
Twenty-sixth	1940	Winged Foot Golf Club, Mamaronek, New York	John M. Murphy	George W. Hall	Grayson Carroll

*Deceased

broadcast it at another hour or even on another day. It is advisable therefore to verify the time by reference to local newspapers or by telephoning the local Blue network stations.

The programs will dramatize what modern medicine offers the individual in the way of opportunities for better health and the more successful treatment of disease. Incidental to this main theme the programs will explain the characteristics of the different fields of modern medicine and its specialties.

Descriptive posters for local distribution may be had gratis from the Bureau of Health Education, American Medical Association, 535 North Dearborn Street, Chicago. Program titles will be announced weekly in THE JOURNAL and monthly in *Hygeia,* the Health Magazine.

Tickets are available for each broadcast. Address the Bureau of Health Education, American Medical Association, 535 North Dearborn Street, Chicago. Tickets are free, but a stamped self-addressed envelop should accompany requests.

The next three programs to be broadcast, together with their dates and their topics, are as follows:

December 4. Paging Dr. Drew.
December 11. The Family's First Friend.
December 18. A Stitch in Time.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. Res. 630 has passed the House, providing that an additional assistant in the attending physician's office of the House of Representatives shall be paid the sum of $30 a month from the contingent fund of the House until otherwise provided for by law. H. R. 10278 has passed the House and Senate, providing that until May 15, 1945, the Secretary of War may, in his discretion, dispense with any part of the examination for promotion in the Regular Army of officers of the Medical, Dental and Veterinary Corps, except those relating to physical examination. During the course of the consideration of this bill on the floor of the House, Representative Crawford, of Michigan, proposed that original appointments in the Medical Corps of the Army "shall be made from among graduates of reputable schools or colleges of medicine or osteopathy, under such regulations as the Secretary of War shall prescribe." The amendment was not adopted.

DISTRICT OF COLUMBIA

Changes in Status.—H. R. 8665 has been reported to the Senate, providing for the issuance of a license to practice chiropractic in the District of Columbia to Lou Davis. H. R. 10418 has been reported to the Senate, authorizing the Commission on Licensure to issue a license to practice the healing art in the District of Columbia to Dr. Peter Florey.

WOMAN'S AUXILIARY

Georgia

The Mrs. James N. Brawner cup was won last year by the Woman's Auxiliary to the Ware County Medical Society at Waycross and the previous year by the auxiliary to the Baldwin County Medical Society at Milledgeville. Mrs. Brawner, of Atlanta, first president of the Woman's Auxiliary to the Medical Association of Georgia, presented the cup to the auxiliary for award at each annual meeting, the winner to retain possession until the following meeting. Mrs. Eustace A. Allen, of Atlanta, is chairman of the trophy committee and has compiled the list of credits that will govern the award of the cup this year. A yearbook will be stressed, health education programs, subscriptions to *Hygeia,* the payment of dues on time and an exhibit at the state meeting.

An auxiliary to the Gwinnett County Medical Society was organized at a meeting in Lawrenceville. Mrs. C. W. Roberts, of Atlanta, former president of the Woman's Auxiliary to the Medical Association of Georgia, was the chairman of organization. Mrs. D. C. Kelley, of Lawrenceville, was named president of the new group.

The Woman's Auxiliary to the Randolph County Medical Society met recently with Mrs. J. C. Patterson in Cuthbert.

Illinois

The Aux Plaines branch of the Cook County auxiliary met, September 27, in Oak Park with the president, Mrs. C. W. Stuart, presiding. One hundred and two members and guests were present. Among the honored guests were Mrs. H. J. Dooley, state president; Mrs. W. C. Bornemeier, county president; Mrs. R. K. Packard, past national president, and Mrs. W. J. Wanninger, national hygeia chairman.

The north side branch of the Cook County auxiliary met, September 16, at the McCormick Y. W. C. A., Chicago, with twenty-one members and three guest speakers present. The program was "Information Please." Mrs. R. K. Packard spoke on "Why an Auxiliary?" Mrs. C. G. Goodwin, parliamentarian of the Illinois Federation of Women's Clubs, on parliamentary procedure, and Dr. W. O. Thompson, secretary to the north side branch of the Chicago Medical Society, gave a short address and answered questions.

The Central Branch of the Woman's Auxiliary to the Cook County Medical Society met, October 2, at the Medical-Dental Arts Building, Chicago, with fifty members and guests present. Mrs. W. C. Bornemeier introduced the two guest speakers, Dr. Frank Maple, president of the Chicago Medical Society, and Mrs. H. J. Dooley, president of the state auxiliary. Both spoke on "The Aims and Objectives of the Auxiliary."

The St. Clair County auxiliary met, October 3, in the auditorium of St. Mary's Hospital, East St. Louis, with twenty-eight members present. The president, Mrs. O. M. McCann, presided. The speakers were Mrs. Ethelynne Sullivan, executive secretary of the St. Clair County Tuberculosis Association, and Dr. C. Milton Eberhart, district health superintendent of district number 16. Mrs. W. A. Griffith gave a report on legislative news and Mrs. I. L. Foulon reviewed *Hygeia.* Mrs. R. B. Ellis, radio chairman, presented "The Care of the Skin" on Station WTMU, October 7.

Wisconsin

The twelfth annual meeting of the state auxiliary was held in Milwaukee, September 17-19, with 354 members registered.

Mrs. V. E. Holcombe, president of the Woman's Auxiliary to the American Medical Association, was guest of honor. Three other national board members were present: Mrs. Robert Fitzgerald, chairman of revisions; Mrs. Eben J. Carey, a director, and Mrs. George H. Ewell, chairman of press and publicity.

The honorable Carl F. Zeidler, mayor of the city of Milwaukee, a guest speaker, commended the woman's auxiliary for its work in the field of improvement of public health and described the organization as a front line of defense for the ideals of American medicine. He predicted that in the coming legislative session many measures not in the interest of the health of Wisconsin citizenry would again be introduced, and he encouraged the studying of legislative bills and the dissemination of authentic information on them.

Mrs. Frank W. Pope is the retiring president, Mrs. Donne F. Gosin the president for 1940-1941 and Mrs. J. S. Supernaw the president-elect.

At the annual dinner Dr. Eben J. Carey, dean of Marquette University School of Medicine, gave an address.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ADDITIONAL MEDICAL COLLEGE NEWS AND ARTICLES APPEAR IN THE STUDENT SECTION, PAGE 1931.

CALIFORNIA

The Clinical Aspects of Dermatology.—The University of California Medical School, San Francisco, has announced plans for a refresher course on "Clinical Aspects of Dermatology," to be given in the University of California Hospital, January 6-8. The program will cover various common cutaneous conditions, including tumors. Surgical aspects of dermatology will be considered and there will be lectures on infectious diseases. Additional information may be obtained from the Dean's Office, University of California Medical School, Medical Center, San Francisco.

Society News.—The San Francisco County Medical Society devoted its meeting, October 8, to a symposium on "Can We Get Adequate Nursing Care?" The speakers were Dr. Russel V. Lee, Palo Alto, from the point of view of the general practitioner; Dr. Anthony J. J. Rourke, the hospital superintendent; Marjorie Hart, R.N., private duty nurse; Sally Heitman, R.N., nurses' training school, and Helen Reynolds, R.N., visiting nurse.——Mr. Arthur Cornelius Jr., director of the Los Angeles office of the Federal Bureau of Investigation, discussed "Present Day Problems of Law Enforcement, with Special Reference to Cooperation from the Medical Profession" before the Hollywood Academy of Medicine, October 10.

IDAHO

Life Membership in State Society.—Dr. Joseph N. Davis, Twin Falls, was presented with life membership in the Idaho State Medical Association, September 12, as a token of appreciation for many years of faithful and efficient service. Dr. Davis has attended every annual session of the state association since becoming a member in 1913. He served as secretary-treasurer from 1922 until 1931, when he was made president-elect. From 1935 to 1938 he was a councilor. He was elected secretary-treasurer again in 1938, serving until this year, when he asked to be relieved. He is now state chairman for the Committee on Medical Preparedness of the American Medical Association.

EDITORIAL NOTE.—As we go to press, news is received that Dr. Davis was killed in an automobile accident, November 6.

ILLINOIS

Postgraduate Conference.—The Madison County Medical Society will be host at a postgraduate conference arranged by the state medical society for physicians in the sixth district in Alton, December 4. The following program will be presented by Chicago physicians:

Dr. Henry Close Hesseltine, Newer Endocrines in Obstetrics.
Dr. Lowell D. Snorf, Diagnosis and Treatment of Functional Disorders of the Colon.
Dr. Clifford J. Barborka, Medical Management of Gallbladder Disease.
Dr. Wilber E. Post, Arthritis.
Dr. Hillier L. Baker, Potential Inguinal Hernia with Special Reference to Direct Hernia.
Dr. Archibald L. Hoyne, Scarlet Fever.
Dr. Arno B. Luckhardt, Academic or Unsuccessful Research.
Dr. Warren H. Cole, Hyperthyroidism.

Chicago

Public Lecture by Dr. Ebaugh.—Dr. Franklin G. Ebaugh, professor of psychiatry, University of Colorado School of Medicine, Denver, will address a public meeting sponsored by the Chicago Medical Society in cooperation with the Chicago Pediatric and Neurological societies, December 11, at the Chicago Woman's Club. His subject will be "Your Mental Health."

Branch Meetings.—Dr. John de J. Pemberton, Rochester, Minn., discussed "Indications for Splenectomy and the Results of Operation" before the North Side Branch of the Chicago Medical Society, November 7. Dr. Albert M. Snell, Rochester, addressed the Evanston Branch, November 7, on "Recent Studies on Deficiency States and Vitamin Therapy" and Dr. Charles B. Puestow, "Relation of Vitamins to Surgery."

Society News.—The Chicago Council of Medical Women was addressed, November 13, by Drs. Mila I. Pierce, Evanston, on "Infections of the Newborn"; Louise O. Kappes, Evanston, "Allergy in Children," and Willie Mae Clifton, "Dietary Treatment of Phosphorus Retention in Renal Insufficiency."——The Chicago Gynecological Society was addressed, November 15, among others, by Drs. Milton H. Adelman and Benjamin B. Lennon on "Pituitrin Shock."

IOWA

District Meeting.—The Iowa and Central Illinois District Medical Association held its winter meeting in Davenport, November 15. Dr. Rieber C. Hovde, Davenport, gave a "Statistical Analysis of 115 Consecutive Operations on the Biliary Tract" and Dr. Donald Guthrie, Sayre, Pa., "Diagnosis of Diseases of the Thyroid Gland and Their Treatment."

Annual Fracture Clinic.—The fourth annual "fracture day" sponsored by the fracture committee of the Iowa State Medical Society was held in Cedar Rapids, November 14, in conjunction with the meeting of the Linn County Medical Society. The session was devoted to a symposium on fractures of the spine with the following speakers: Drs. George L. Apfelbach, Chicago; Arthur Steindler, Frank R. Peterson and Clarence E. Van Epps, Iowa City; Arthur W. Erskine and Robert M. Wray, both of Cedar Rapids; Douglas N. Gibson, Lewis M. Overton and Francis A. Ely, Des Moines. The clinic was concluded with a lecture by Dr. Donald Guthrie, Sayre, Pa., on "Thyroid Disease." Dr. Guthrie was the guest speaker of the Linn County Medical Society.

MARYLAND

The Noguchi Lectures.—Dr. Heinrich Zimmer, formerly professor of Sanskrit at the University of Heidelberg, delivered the Hideyo Noguchi Lectures at the Institute of the History of Medicine, Johns Hopkins University School of Medicine, Baltimore. The general subject was "Hindu Medicine," presented in three parts:

November 25, Medical Tradition and the Human Body.
November 27, The Physician and His Concept of Dietetics.
November 29, Diseases and Cures.

Professor Pearl Dies.—Raymond Pearl, Ph.D., professor of biology, Johns Hopkins University School of Medicine, Baltimore, died suddenly in Hershey, Pa., November 17, of coronary thrombosis, aged 61. Born in Farmington, N. H., June 3, 1879, Dr. Pearl graduated at Dartmouth College in 1899, where he also received an honorary degree in science in 1919. He received his degree in philosophy from the University of Michigan in 1902, an honorary doctorate in laws from the University of Maine in 1919 and one in letters from St. John's College, Annapolis, in 1935. Dr. Pearl began his career as assistant zoologist at Michigan in 1899, becoming instructor in 1902. In 1906 he went to the University of Pennsylvania for one year. From 1907 to 1918 he was biologist and head of the department of biology at the Experimental Station in Maine. He became professor of biometry and vital statistics at the Johns Hopkins University School of Hygiene and Public Health in 1918, serving as research professor from 1925 to 1930. He was named professor of biology in the school of medicine in 1923 and in the school of hygiene and public health in 1930, holding both positions until his death. He was director of the institute of biologic research at the school from 1925 to 1930. He was president of the International Union for Scientific Investigation of Population Problems from 1928 to 1931 and later of other scientific bodies. He wrote extensively on his subject.

MASSACHUSETTS

Society News.—Dr. Richard H. Overholt, Brookline, addressed the Trudeau Society of Boston, October 24, on "The Management of Pulmonary Abscess."——The Northeastern Conference on Mental Health was to be held in Salem, November 15; the speakers included Drs. Ira S. Wile, New York, "Mental Health of the Community," and Harry C. Solomon, Boston, "Diagnosis and Treatment of Mental Disorders."

Memorial Meeting to Dr. Maude Abbott.—The New England Heart Association held a special meeting at the Boston Medical Library, November 8, in honor of the late Dr. Maude E. S. Abbott, formerly assistant professor of medical research and curator of the medical museum, McGill University Faculty of Medicine, Montreal. The speakers were:

Dr. Charles F. Martin, Montreal, Dr. Abbott and McGill University.
Dr. Paul D. White, Boston, Her Contribution to Cardiology.
Dr. Emanuel Libman, New York, Personal Reminiscences.
Dr. Helen B. Taussig, Baltimore, Changes Which Occur During Life in Patients with Congenital Malformations of the Heart.

MINNESOTA

Personal.—Dr. Bertram S. Adams, Hibbing, president of the Minnesota State Medical Association, was honored at a dinner, October 22. Dr. Adams had been selected as the "seventh annual honor night choice" by the Hibbing Elks Lodge. —— Dr. William F. Braasch, Rochester, was recently made a corresponding member of the Sociedad Venezolana de Urología and of the Sociedad Cubana de Urología.

Society News.—Dr. Walter Henry Valentine, Tracy, has been named president of the Southern Minnesota Medical Association and Dr. Nelson W. Barker, Rochester, reelected secretary-treasurer.——Dr. Julian F. DuBois, Sauk Centre, has been chosen president of the Northern Minnesota Medical Association and Dr. Clarence Jacobson, Chisholm, secretary. ——Dr. William F. Braasch, Rochester, addressed the Minnesota Academy of Medicine, November 13, in St. Paul, on "Hypertension and Surgical Disease of the Kidney." Dr. William A. H. Hanson, Minneapolis, presented his thesis on "Tumors Simulating Carcinoma — Hand-Schüller-Christian's Disease."

NEW YORK

Society News.—Drs. Wardner D. Ayer and Abraham C. Silverman addressed the Onondaga County Medical Society, Syracuse, November 4, on "Chronic Cerebral Disease—A Critical Review with Special Reference to Diagnosis and Treatment" and "Outbreak of Poliomyelitis in a Child-Caring Institution in Syracuse" respectively.——At a meeting of the Syracuse Academy of Medicine, November 19, the speakers were Drs. Marguerite P. McCarthy, Solvay, and Joseph R. Wiseman on "An Analysis of Treated Hay Fever Patients at the Allergy Clinic, Syracuse Free Dispensary"; Frederick S. Wetherell, "Nodular (Adenomatous) Goiter — Present Day Concepts of Its Management," and Robert C. Schwartz, "Patent Ductus Arteriosus, with Operation—Case Report."

New York City

The Welch Lectures.—Dr. Francis Peyton Rous, member of the Rockefeller Institute for Medical Research, will deliver the William Henry Welch Lectures, presented by Mount Sinai Hospital, December 6 and 9. Dr. Rous's subjects will be "Conditions Determining Cancer" and "The Known Causes of Cancer."

Meeting on Chronic Pulmonary Diseases.—The Tuberculosis Sanatorium Conference of New York will hold a clinical session on chronic pulmonary diseases at Cornell University Medical College, December 11. The program will be presented by the staff of the Municipal Sanatorium, Otisville, as follows: Drs. Samuel A. Thompson, New York, and Mortimer Greenberg, Otisville, "A Plea for the Early Jacobaeus Operation in the Treatment of Incomplete Collapse Therapy"; Joseph Emerson Noll, Port Jervis, "Data Concerning Location and Measurements of Pulmonary Cavities and Foreign Bodies," and Milton S. Lloyd, "Pulmonary Drainage: Its Relation to Collapse Therapy in the Treatment of Tuberculosis."

Friday Afternoon Lectures at the Academy. — Dr. Irving S. Wright delivered the fourth Friday Afternoon Lecture of the current series at the New York Academy of Medicine, November 29, on "Thrombophlebitis—Recent Advances in Knowledge and Treatment." Coming lectures will be:

Dr. Ralph H. Boots, Gold Therapy in Rheumatoid Arthritis, December 6.
Dr. James William Hinton, Cancer of the Stomach: Early Diagnosis and Surgical Indications Based on the Review of 700 Cases, December 13.
Dr. Norman H. Plummer, Specific Treatment of Pneumonia, January 3.
Dr. Tracy J. Putnam, The Nature and Treatment of Epilepsy, January 10.
Dr. John Scudder, Newer Knowledge of Blood Transfusion, January 17.
Dr. Kenneth R. McAlpin, Blood Diseases from the Standpoint of the Clinician, January 24.

Previous lectures in the series were: Drs. Harold J. Stewart on "Digitalis Therapy: Mechanism of Its Action in Congestive Heart Failure," November 1; Harold T. Hyman, "Massive Dose Chemotherapy or Intravenous Drip Chemotherapy," November 8, and Thomas Duckett Jones, Boston, "Care of the Patient with Rheumatic Fever," November 15.

NORTH CAROLINA

Special Society Meetings.—Dr. Milton R. Gibson, Raleigh, was elected president of the North Carolina Eye, Ear, Nose and Throat Society at its annual meeting in Winston-Salem, recently. Dr. Thomas C. Kerns, Durham, was made vice president and Dr. Vanderbilt F. Couch, Winston-Salem, secretary. Guest speakers at the meeting were Drs. William Thornwall Davis, Washington, D. C., on "Physiotherapy in Ophthalmology" and "Medical Ophthalmology" and Edward A. Looper, Baltimore, on "Cancer of the Larynx" and "Laryngeal Tuberculosis." The society voted to require that henceforth applicants for membership must have passed examinations of the American Board of Ophthalmology or the American Board of Otolaryngology.——Dr. Robert W. McKay, Charlotte, was elected president of the North Carolina Urological Association at the annual meeting in Greensboro, October 14. Dr. John W. Frazier Jr., Salisbury, was elected vice president and Dr. William C. Lott, Asheville, secretary. The guest speaker at the meeting was Dr. Roy B. Henline, New York, who spoke on "Adequate Treatment of Prostatic Disease from a Pathological Viewpoint."

PENNSYLVANIA

Easton Hospital Fifty Years Old.—The fiftieth anniversary of the founding of Easton Hospital, Easton, was observed November 11. Open house was held at the hospital and a plaque honoring the first board of trustees was unveiled. The hospital was established in 1890 with a fund of $7,000 raised by a hospital bazaar, said to have been the most important social event in the town's history. The first building, a remodeled residence, had ten beds. Additions were made in 1894 and a new brick building replaced the early frame structure in 1906. The present building, with facilities for 192 patients and twenty-one newborn infants, was built in 1930.

Philadelphia

The DeSchweinitz Lecture.—Dr. Frederick H. Verhoeff, Boston, delivered the third annual DeSchweinitz Lecture before the section of ophthalmology of the College of Physicians of Philadelphia, November 20. His subject was "Occlusion Hypertropia."

Anthrax and Industry.—The bureau of industrial hygiene of the Pennsylvania Department of Health and the Philadelphia Department of Health sponsored a symposium on anthrax, November 19, at the Philadelphia County Medical Society Building. The speakers were:

Col. Arthur Parker Hitchens, History and Biology of the Anthrax Bacillus.
Dr. Pascal F. Lucchesi, Treatment of Anthrax.
Dr. Henry Field Smyth, Anthrax in the United States.
Ivor Griffith, Ph.M., The Felt Hat Industry.
Harry D. Immel, Pennsylvania Department of Labor and Industry, The Enforcement Problem.
Dr. William B. Fulton, Joseph F. Meller Jr. and William H. Krecker Jr., bureau of industrial hygiene, state health department, Harrisburg, An Epidemiological Study of Anthrax in Philadelphia.
L. B. F. Raycroft, co-chairman, Philadelphia Industrial Hygiene Association, Helpful Employer-Employee Relationships for Prevention of Anthrax.

Pittsburgh

Society News.—Speakers at a meeting of the Pittsburgh Academy of Medicine, November 12, were Drs. Bender Z. Cashman on "The Role of Deep Cauterization in the Prevention of Cancer of the Cervix"; Charles Russell Schaefer, Pittsburgh, "Glycolysis in Leukemia," and William A. Heazlett, Wilkinsburg, "Masked Diabetes Insipidus."——Drs. James H. Rankin Jr. and Michael Cammarata, Woodville, addressed the Pittsburgh Neuropsychiatric Society, November 18, on "Fracture Prevention in Metrazol Treatment; Demonstration of Technic" and "Treatment of Epilepsy, with Special Reference to Dilantin" respectively.

VIRGINIA

Portrait of Dr. Tucker. — Ex-residents of Tucker Sanatorium, Richmond, presented a portrait of Dr. Beverley R. Tucker to the sanatorium recently. Dr. Thomas G. Hardy, Farmville, made the presentation for the ex-residents and Dr. Howard R. Masters accepted for the sanatorium. Dr. James Asa Shield presided at the exercises, which were attended by a number of ex-residents now practicing in other cities.

Regional Meetings.—The Southwestern Virginia Medical Society met at the Southwestern State Hospital in Marion, October 2, with Drs. Russell L. Haden, Cleveland, and David C. Wilson, Charlottesville, as the guest speakers on "Treatment of Anemia" and "New Drugs in Neuropsychiatry" respectively. —— The Clinch Valley Medical Society held a meeting at Norton, October 18, with the following speakers: Drs. James T. Tucker, Richmond, on "The Use of Modern Drugs in Traumatic and Orthopedic Surgery"; Henry C. Spalding, Richmond, "Practice of Obstetrics in the Home"; Fred J. Wampler, Richmond, "Progress in the Prevention of

Diseases"; George Fordham, Powellton, W. Va., "Developing a Medical Program for a Coal Industry," and Mr. R. T. Homewood of the state health department, who outlined the part that the bureau of industrial hygiene may play in a health program for the mining industry.

WASHINGTON

Society News.—The fall meeting of the Pacific Northwest Dermatological Society was held in Spokane, October 17. Dr. Hamilton Montgomery, Rochester, Minn., was the guest speaker on "Pathology of Skin Diseases."——Speakers before the King County Medical Society, Seattle, November 4, were Drs. Philipp Schonwald, on "Fungus Allergies"; James E. S. Stroh, "Treatment of the Acute Asthmatic Patient," and Alexander R. Altose, "The Allergic Nose." All are of Seattle. ——Dr. Joseph A. Beeman, Portland, Ore., addressed the Spokane County Medical Society, Spokane, November 14, on "The Role of the Medical Profession in Criminal Investigation."

GENERAL

Conviction of Norman Baker Sustained.—On November 22 the conviction of Norman Baker and his two associates R. A. Bellows and Dr. J. L. Statler, on a charge of using the mails to defraud, was affirmed by the Eighth Circuit Court of Appeals at St. Louis. In January 1940 Baker was sentenced by the Federal District Court to four years in prison and fined $4,000 in connection with the promotion of his cure for cancer.

Venereal Disease Rates in Cities and States.—The U. S. Public Health Service has issued a statement on the prevalence of syphilis and gonorrhea in cities for the fiscal year 1940; some of the rates for cities, however, are based on fewer than twelve months. A statement has also been issued giving the rates for these diseases by states. The total annual rate for syphilis per thousand of population was 3.68 and varied for the various states from 0.37 for Wisconsin to as much as 20.34 for Mississippi. The syphilis rate for the Virgin Islands was 20.09, Florida 13.94, District of Columbia 10.76 and South Carolina 10.27. The annual rate per thousand of population for gonorrhea totaled 1.36, varying from 0.40 for Wisconsin to 14.39 for Mississippi. The gonorrhea rate for the Virgin Islands was 9, District of Columbia 5.36, Alaska 3.92 and Arizona 3.28. The data on which these reports were based were monthly reports from state and city departments of health. The total number of new cases of syphilis reported by states for the month of August 1940 was 38,088, and of new cases of gonorrhea 15,921. The new syphilis cases reported included primary, secondary, early latent and congenital cases.

Academy of Dermatology and Syphilology.—The third annual meeting of the American Academy of Dermatology and Syphilology will be held at the Palmer House, Chicago, December 8-11. The preliminary program announces that there will be special courses, luncheon round table discussions, clinical presentations, lectures and symposiums. Courses in histopathology and mycology and the clinical presentations will be at the University of Illinois College of Medicine. Among subjects of the symposiums will be: physiology and chemistry of the skin, led by Dr. Donald M. Pillsbury, Philadelphia; pharmaceutical therapeutics, by Dr. Otto H. Foerster, Milwaukee; allergy, by Dr. Samuel M. Peck, New York, and syphilis, by Dr. Udo J. Wile, Ann Arbor, Mich. Addresses will be given by the following:

Dr. Cyrus C. Sturgis, Ann Arbor, Mich., Diseases of the Blood and Blood Forming Organs: Their Relation to the Skin and Mucous Membranes.
Dr. Edward A. Oliver, Chicago, Rare Dermatoses.
Dr. Lyle B. Kingery, Portland, Ore., Recent Advances in Our Knowledge of the Ringworm Infections.
Dr. Elmer L. Sevringhaus, Madison, Wis., Endocrines and Their Relation to Dermatology.
Dr. William F. Petersen, Chicago, The Patient, His Skin and the Weather.

Annual Meeting of Infantile Paralysis Foundation.—The National Foundation for Infantile Paralysis held its first annual medical meeting, November 7-8, at the Waldorf-Astoria Hotel, New York. Reports were heard from the committees on virus research, public health (epidemics), research for the prevention and treatment of after-effects, education, medical publications and nutritional research. The committees recommended grants totaling $150,580 for the coming year, including one of $6,600 for epidemic aid in the Philippine Islands. Dr. Herman N. Bundesen, Chicago, was elected chairman of the committee on public health (epidemics) to succeed Dr. Thomas Parran, surgeon general, U. S. Public Health Service, Washington, D. C., who resigned because of the pressure of other activities. Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, was elected chairman of the committee on medical publications to succeed Dr. Max M. Peet, Ann Arbor, Mich. The following chairmen were reelected: Drs. Thomas M. Rivers, New York, committee on virus research; Philip Lewin, Chicago, committee on research for prevention and treatment of after-effects; James S. McLester, Birmingham, Ala., committee on nutritional research, and Dr. Peet, committee on education. At a banquet Thursday evening Mr. Basil O'Connor, New York, president of the foundation, delivered the principal address. The dinner was attended by 120 persons, including committee members, trustees and officers, forty-four grantees of previous years and newspaper science editors and writers.

National Institute of Health Studies Problems of Aging.—A new unit formed in the National Institute of Health for the study of problems of aging, called the Unit on Gerontology, announces that it is conducting a survey of the present trends of active and contemplated investigations in this field. Inquiries about studies on aging are being sent to scientists in the basic biologic sciences as well as to clinical investigators, in the belief that much fundamental work on the processes, mechanisms and consequences of senescence is going on in sciences related to medicine. Critical analysis of the information elicited by such a survey may be expected to serve several purposes, the announcement said. It should facilitate closer cooperation among investigators interested in related problems and it will emphasize the urgent need for augmented support of studies for the problems of senescence. It will reveal "blank spots" in research that may justify special emphasis in the future and will be an invaluable aid in formulating future research programs, it was said. Dr. Edward J. Stieglitz, Garrett Park, Md., is in charge of the investigations in gerontology, and the following national advisory committee has been appointed:

Dr. Lewis R. Thompson, director, National Institute of Health, Washington, D. C.
Dr. Anton J. Carlson, Frank P. Hixon distinguished service professor emeritus of physiology, University of Chicago.
Dr. Charles L. Christiernin, New York, medical director, Metropolitan Life Insurance Company.
Robert E. Coker, Ph.D., professor of zoology, University of North Carolina, Chapel Hill, N. C.
William Crocker, Ph.D., director, Boyce Thompson Institute of Plant Research, Yonkers, N. Y.
Mr. Lawrence K. Frank, sociologist, Josiah Macy Jr. Foundation, New York.
Albert Baird Hastings, Ph.D., Hamilton Kuhn professor of biological chemistry, Harvard University, Cambridge, Mass.
Dr. Ludvig Hektoen, Chicago, consultant, National Cancer Institute, U. S. Public Health Service.
Dr. Winfred Overholser, superintendent, St. Elizabeths Hospital, Washington, D. C.
Dr. Clarence D. Selby, medical consultant, General Motors Corporation, Detroit.
Dr. William D. Stroud, professor of cardiology, The Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, Philadelphia.

A conference of this committee was held at the institute, November 25-26. Information concerning subjects under investigation and the methods of approach is earnestly solicited. Letters should be addressed to Dr. Stieglitz, In Charge, Investigations in Gerontology, National Institute of Health, Bethesda, Md.

FOREIGN

Physicians in the New Germany.—According to the *Münchener medizinische Wochenschrift,* Germany now has (in the region of the old reich) 59,454 physicians, compared to 55,259 during 1937. During the latter year Germany still had 4,220 Jewish physicians. In the "Ostmark" (Austria) the estimated number of physicians is 7,000, in the Sudeten district 2,000. If the numerous approbations during last year are counted in, the total number of physicians may be estimated at approximately 75,000. Three Japanese women physicians have arrived in Berlin for a half-year's stay in Germany. In Japan two of them were active in gynecologic clinics and one in the department for infants in a Red Cross hospital. Their studies in women's occupations, social work and medicine will be made under the patronage of the "Reichsfrauenführung" (women's organization of the reich) and of the "Reichsärzteführer" (leader of the physicians of the reich). Japan has at present 5,500 women physicians. By a decree of the Rumanian minister of health, thirty-four Jewish physicians who were active as county physicians were dismissed; the dismissal was effective immediately. Likewise thirty-one Jewish physicians connected with the social insurance were removed from their positions.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 2, 1940.

Medical Education Under the Air Raids

London has twelve medical schools, without counting postgraduate ones, the greatest number in any city in the world. The continuous bombing has damaged many of the hospitals to which they are attached as well as school buildings. But medical education is not interrupted, though it goes on in a different way. London was divided into sectors with the great hospitals at the apexes and connected to affiliated hospitals in the surrounding country, to which most of their patients were removed, so that they could be used as casualty clearing stations for the victims of air raids, who were expected to number many thousands. Thanks to our defenses and air raid precautions the number has been much smaller. The students were dispersed to the "sector hospitals." It was hoped to resume normal teaching at the London hospitals on the opening of this winter session. But the bombing, which has seriously damaged some of them, has prevented this. St. Thomas's Hospital received three direct hits from bombs in six days and had to be evacuated. Though the foundation of the hospital goes back to medieval times, the present building, with its eight linked pavilions and medical school on the bank of the Thames, is one of the most modern of the London hospitals. It has been necessary to make arrangements for the preclinical teaching in the country as well as for the clinical teaching at sector hospitals. The London hospital has been hit several times but the walls have not been damaged and there have been no casualties. However, the precaution has been taken of reducing the number of beds, and now only acutely ill patients and casualties are admitted. But systematic teaching continues at the hospital, though clinical work is done by the students at the sector hospitals in the mornings. They return in the afternoons to the hospital for the systematic teaching. One new advantage is that, while in peace time only 800 beds were available at the London Hospital, the sector hospitals provide 10,000. Similar arrangements are made by the other schools. The preclinical students are sent to medical schools in other cities, some as distant as Bristol and Cardiff, or to improvised schools in the country. While the material for the clinical students is much diminished at their own hospitals, they have the advantage of a much greater number of beds at the sector hospitals. Hence the remark of one dean that their education, though less academic, is more practical. The preclinical students of St. Bartholomew's Hospital are housed in the University Laboratories [censor]. Those of Guy's Hospital are receiving their tuition at temporary premises in [censor], those of University College Hospital at the [censor] National School [censor].

The Growing of Medicinal Plants

Few medicinal plants are grown in this country; we have to rely on imports, which the war has interrupted. The Ministry of Health, in collaboration with the Ministry of Agriculture, is taking measures to secure an adequate home supply of the four important plants belladonna, hyoscyamus, stramonium and digitalis. At the same time work is being done along genetic and ecologic lines to increase the yield of active principles from these plants. The Therapeutic Requirements Committee of the Medical Research Council has also recommended the production or collection of numbers of medicinal plants in Britain, such as colchicum, filix mas, hamamelis, pyrethrum. Bulletins on the growing of these plants are issued by the Ministry of Agriculture. More has not been done in this direction in the past because the plants could be imported at prices which would not pay for their growing at home. It is also suggested by the Therapeutic Requirements Committee that more drugs should be grown in the British Empire, which can produce every important drug. Among the examples given are camphor, cascara sagrada, cinchona, coca, ipecacuanha, turpentine, santonin, thymol. It has been stated by J. C. Ghosh in his book "Indigenous Drugs of India" that half the drugs of vegetable origin in the British pharmacopeia are indigenous to India and that nearly all the others could be grown there.

The War Strain on Health Services

In Parliament the minister of health, Mr. Malcolm MacDonald, stated that the war had thrown a strain on our health services which they had successfully withstood. Because of the dangers of air raids, 730,000 children and 420,000 mothers were evacuated from industrial cities to the country. This huge migration was from populous areas where the necessary medical services were well established to areas where they were sparse. The difficult problem presented to the health authorities had to be met by swift improvisation. A skilled staff was recruited, and houses and other buildings were transformed into sick bays, residential nurseries, residencies for cripples and maternity homes. For London mothers alone homes were furnished in the country to cope with 2,800 confinements every month, and 500 expectant mothers were now leaving London every week. The evacuation of that much bombed city and of other cities was not a prelude to defeat nor the death agony of Britain but rather the unpleasant, the terrible but hopeful birth pangs of a new Britain. A fact about the new Britain was that the sojourn of London and other city children in the country had made them taller, heavier and more resistant to illness.

THE EMERGENCY HOSPITAL SERVICE

The Emergency Hospital Service was a remarkable creation. To the great resources of our hospitals had been added other public institutions, which by provision of operating rooms and equipment were transformed into first class hospitals. The permanent hospitals had been surrounded by new pavilions which could hold tens of thousands of extra patients. The number of air raid casualties was small compared with the efforts of the German airmen. At the moment only 5,500 beds had air raid casualties. Among the problems aggravated by the war was venereal disease. Its incidence had shown a large and steady decline in the past twenty years, but in the last few months there were indications of an increase. Local authorities were being asked to expand the existing services where necessary.

Precautions Against Disease in Air Raid Shelters

In a broadcast, Mr. Malcolm MacDonald, minister of health, spoke of the dangers to national health from overcrowding of air raid shelters in the coming winter and the arrangements to combat possible epidemics which might result. The most potent threat might be not the bomb and the parachute but the germs of influenza and other infectious diseases which generally can be held in check in peace time. The toughest new problem had been created by the gathering of people to sleep night after night in the large air raid shelters. Infectious diseases might lodge there and spread. The danger would be much reduced if the nightly population of the shelters was kept within reasonable proportions. Apart from influenza the dangerous disease most likely to spread to the camps and shelters this winter was cerebrospinal fever. But sulfapyridine had reduced the mortality of that disease to a fraction of what it was. Among the precautions to be taken was the setting up of medical aid posts in the large centers. There would be a nurse in regular attendance and a physician either in residence or on call. The shelters would be equipped to minister not only in cases of accident but for minor ailments which might be aggravated by the life in them.

In connection with the government's scheme to supply medicine for minor ailments in public shelters, it is proposed to set up local pharmacists' rotas for personal service. The War Emergency Council of the Pharmaceutical Society is discussing this development with the Ministry of Health. The stocks at these miniature underground pharmacies would be limited to a small range of preparations for immediate use by persons showing symptoms of nasal catarrh, throat and lung troubles or other ailments of an infectious nature. There would be an adequate supply of gauze pads to apply to the nose and mouth of persons with symptoms suggesting the presence of germs. These pads would be a signal to others to keep at a distance. Antiseptic compounds and surgical dressings would also be kept in readiness.

In the eighty stations of the London underground railways, 100,000 persons find shelter from bombs. They sleep on the platforms and passages in perfect safety. The latest arrangement is to distribute to them, by a special train, tea, coffee and cocoa, supplied at a charge of 2 cents per cup, and light refreshments, such as buns, biscuits, apples and sausage rolls, for which the maximum charge is 4 cents. The London County Council is providing 7,000 hot meals daily at its community centers for persons whose dwellings have been destroyed by bombs.

Criticism of the War Loaf

Nutritional experts have been stressing the superiority of bread made with wholemeal flour over that made with white flour because the latter is deficient in important ingredients, particularly vitamin B_1 and minerals. In spite of this, white bread remains much more popular than wholemeal. The government, which now controls and rations our food supply, has decided to fortify white bread by the addition of vitamin B_1 and calcium. This step was taken after receiving the report of a scientific committee. The decision has given rise to much controversy in the *Lancet*. In announcing this war bread in the House of Commons the minister of food described the drawbacks of wholemeal bread as unpalatability, indigestibility, lack of keeping qualities of white flour and invincible preference of the community for white bread. Sir Ernest Graham-Little, dermatologist and member of Parliament, points out that the report of a committee of the Royal Society on the digestibility of bread furnishes a direct negative to these allegations. Why did not the Ministry of Food follow the measures adopted in the last war on the advice of the committee of the Royal Society, one of which was the supply of a wholemeal war loaf? The measure now adopted involves the extraction from wheat of the major part of its vitamin content and the restoration of only vitamin B_1 in synthetic form. Graham-Little claims that the natural vitamin is superior to the synthetic. He also suggests that commercial interests are opposed to the loss of their trade in the by-products of the milling of white flour. A biochemist, R. A. Peters, contradicts Graham-Little as to the superiority of the natural vitamin and states that the synthetic vitamin is shown by every test—chemical, physical, biologic and clinical—to be equivalent. A cardiologist, Isaac Harris, is concerned about the addition of calcium to the bread. In his book "High Blood Pressure" he has shown that the kidney is exposed to a considerable strain when called on to excrete an excess of calcium and that a moderate administration has a profound influence on the character of the electrocardiogram.

The American Hospital Unit

The arrival of the American hospital unit, led by Dr. Philip Wilson, professor of orthopedic surgery at Columbia University College of Physicians and Surgeons, has been reported in previous letters. After landing at Liverpool the unit spent a week in visiting hospitals in the northwest under the guidance of Prof. Harry Platt of Manchester. It then came to London, where it was welcomed by the Ministry of Health and other official bodies. After a survey, it was decided that it should take over a section of the war hospital at Park Prewitt, which in normal times is a mental hospital of 1,450 beds. General surgery is done there, but no orthopedic center existed and it is proposed that the American unit shall develop this. At the same time employment will be found in the department established in the hospital by Sir Harold Gillies for the member of the unit specializing in facial and maxillary surgery. But the idea of a separate American hospital has not been dropped. If the war becomes more intense and casualties increase, the unit reinforced from the United States will proceed to this work. Professor Wilson has cabled to America with a view to forming a neurosurgical team, which is desired by the British Emergency Medical Service. It would be accompanied by its own x-ray and laboratory technicians. In addition to clinical work Professor Wilson desires to carry out some research and he has been in touch with the British Medical Research Council so as to link up with it anything he may do in this direction.

A Physician Who Became an Anthropologist

The death at the age of 67 of C. G. Seligman, F.R.C.P., F.R.S., emeritus professor of ethnology in the University of London, has removed a man who began a distinguished career in the medical profession and abandoned it to become an eminent anthropologist. Seligman received his medical education at St. Thomas's Hospital, where he had a research scholarship under the pathologist S. G. Shattock. He was invited to join the Cambridge Anthropological Expedition, led by A. C. Haddon to the Torres Straits and Borneo. With Rivers, McDougall and Myers he began anthropological work on a tribe in North Queensland. He studied native diseases and collected information on native magic and customs. Returning to England he was appointed director of the clinical laboratory at St. Thomas's Hospital. But the attraction of anthropology proved too great and he embarked on an expedition which resulted in a monumental work, "The Melanesians of New Guinea." Returning to England again he worked at pathology for the last time, contributing to the Proceedings of the Royal Society a paper entitled "Observations on the Acquirement of Secondary Sexual Characters Indicating the Formation of an Internal Secretion of the Testicle." In 1908 he was commissioned by the government of India to work on the Veddas, a primitive people of Ceylon. The book that resulted was produced in collaboration with his wife and remains a standard work on the history and culture of these people. They also studied African ethnology and produced "The Pagan Tribes of the Nilotic Sudan," which was the first complete cultural survey of these people. In 1910 he was appointed lecturer on ethnology in the University of London and in 1913 professor. He applied psychoanalysis to the folklore and dreams of primitive people and endeavored to trace freudian phases in their sexual life.

Marriages

WILLIAM C. KEETTEL JR. to Miss Mary Helen Shinn, both of Iowa City, at Waverly, June 30.

RAYMOND A. NEWTON, Genoa, Neb., to Mrs. Helen Carstens of Chicago in Omaha, June 29.

KENNETH L. MCSHANE to Miss Della Jacobson, both of Loveland, Colo., June 28.

CLARENCE F. BANTIN to Miss Angeline Phillips, both of Omaha, July 14.

GORDON MARTIN to Miss Neva Cocklin, both of Lincoln, Neb., June 14.

LOUIS R. NASH to Mrs. Madeline Carey, both of Ingleside, Neb., July 6.

Deaths

Charles Edward Humiston ✠ Chicago; College of Physicians and Surgeons of Chicago, 1896; an Affiliate Fellow of the American Medical Association; member of the House of Delegates of the American Medical Association, 1915, 1916, 1918, 1919 and from 1921 to the special session of 1935; a member of the Council on Medical Education and Hospitals of the American Medical Association from 1930 to 1937; past president of the Illinois State Medical Society; past president and secretary of the Chicago Medical Society; professor of surgery emeritus at his alma mater, now known as the University of Illinois College of Medicine; formerly on the staffs of the Chicago State Hospital and the Cook County Hospital; in 1922 was awarded the honorary degree of doctor of science from Marietta (Ohio) College; aged 72; co-founder, president of the West Suburban Hospital Association, from 1911 to 1914; member of the board of directors and trustee and for many years on the staff of the West Suburban Hospital, Oak Park, where he died, November 4, of encephalomalacia, cerebral thrombosis and arteriosclerosis.

Quitman Underwood Newell ✠ St. Louis; University of Alabama School of Medicine, 1911; assistant, instructor, assistant professor, associate professor from 1915 to 1935 and professor of clinical obstetrics and gynecology at the Washington University School of Medicine; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Southern Surgical Association and the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; president-elect of the Southern Medical Association; served during the World War; associate obstetrician and gynecologist, Barnes, St. Louis Maternity and St. Louis Children's hospitals; obstetrician and gynecologist, St. Luke's and Missouri Baptist hospitals; aged 54; died, November 4, of coronary sclerosis.

Arthur Carroll Scott ✠ Temple, Texas; Bellevue Hospital Medical College, New York, 1886; member of the House of Delegates of the American Medical Association, 1911, 1924, 1925, 1926, 1927; member and past president of the Southern Surgical Association; past president of the State Medical Association of Texas, Central Texas Medical Society and the Texas Association of Railway Surgeons; fellow and member of the board of governors of the American College of Surgeons; formerly member of the state prison board; chief surgeon, Gulf, Colorado and Santa Fe Hospital; founder and president on the staff of the Scott and White Hospital; aged 75; died, October 27, of coronary occlusion.

Pascal Brooke Bland ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1901; assistant professor of gynecology at his alma mater from 1915 to 1925 and professor of obstetrics from 1925 to 1937, when he was made professor emeritus; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons; fellow of the American College of Surgeons; past president of the Obstetrical Society of Philadelphia; consulting obstetrician to the Jefferson Hospital; author of "Gynecology, Medical and Surgical" and "Obstetrics for Students and Practitioners"; aged 65; died, October 31, in the Bryn Mawr (Pa.) Hospital of a self-inflicted bullet wound.

William Henry Holmes ✠ Chicago; Northwestern University Medical School, Chicago, 1910; professor of medicine at his alma mater; member of the Central Society for Clinical Research; served during the World War; on the staffs of the Wesley Memorial Hospital and the Passavant Memorial Hospital; author of a book entitled "Infectious Diseases"; aged 53; died, November 2, in Ann Arbor, Mich., of pulmonary and cerebral abscesses.

George Dorsey Green, Lock Haven, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1899; member of the Medical Society of the State of Pennsylvania; past president of the Clinton County Medical Society; served during the World War; on the staff of the Lock Haven Hospital; aged 66; died, October 15, in the University of Pennsylvania Hospital, Philadelphia, of carcinoma of the pancreas.

John Joseph Maria Carey, Brooklyn; Long Island College Hospital, Brooklyn, 1908; member of the Medical Society of the State of New York; aide to Governor Lehman and formerly aide to President Franklin D. Roosevelt when he served as governor of New York; on the staffs of the Norwegian and Victory Memorial hospitals; served during the World War; aged 58; died, October 1.

Edward Everett Hicks, Brooklyn; University of the City of New York Medical Department, 1893; formerly assistant clinical professor of neurology at the Long Island College of Medicine; member of the American Psychiatric Association; on the staff of the Kings County Hospital and the Brooklyn State Hospital; aged 69; died, October 18, of cerebral hemorrhage and arteriosclerosis.

Julius Burson Cooper ✠ Birmingham, Ala.; Chattanooga (Tenn.) Medical College, 1904; veteran of the Spanish-American War; was trustee of the Snead Junior College and Wesleyan College; on the courtesy staff of the Norwood Hospital and of the South Highlands Infirmary; aged 63; died, October 19, in the Veterans Administration Facility, Hines, Ill., of carcinoma of the pancreas.

Arthur Lynn Anderson, Springfield, Mo.; University Medical College of Kansas City, Mo., 1900; fellow of the American College of Physicians; served during the World War; on the staffs of St. John's Hospital, Burge Hospital and Springfield Baptist Hospital, Springfield, and the Missouri State Sanatorium, Mount Vernon; aged 65; died, October 25, of cerebral hemorrhage.

Edward John Lawrence, Spokane, Wash.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1908; member of the Washington State Medical Association; served during the World War; formerly member of the school board; on the staffs of the Sacred Heart, Deaconess and St. Luke's hospitals; aged 57; died, September 13, of acute coronary thrombosis.

Walter Harry Hassed, Lusk, Wyo.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1908; member of the Wyoming State Medical Society; formerly secretary and state health officer, Wyoming State Board of Health, and secretary of the state board of medical examiners; aged 56; died, September 23, of a self-inflicted gunshot wound.

Edward Clement Davidson, La Fayette, Ind.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891; member of the Indiana State Medical Association; fellow of the American College of Surgeons; for many years county coroner; on the staffs of St. Elizabeth's and Lafayette Home hospitals; aged 73; died, October 7.

Lane Bruce Kline, Houston, Texas; George Washington University School of Medicine, Washington, D. C., 1907; formerly a medical missionary; served during the World War; formerly health officer; at one time with the Veterans Administration; aged 59; died, September 30, in the St. Joseph Hospital of heart disease.

Herbert Mott Bentley, Sterling, Kan.; Hahnemann Medical College and Hospital, Chicago, 1897; served during the World War; was a member of the board of education; formerly mayor and vice president of the state board of health; aged 68; died, August 28, in Lawrence of cerebral hemorrhage and arteriosclerosis.

Rudolf Freimuth Teschan, Milwaukee; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900; during the World War served as a medical examiner; formerly on the staff of the Evangelical Deaconess Hospital; aged 63; died, October 7, of coronary heart disease.

Frank Albert Davis, Hampton, N. H.; Boston University School of Medicine, 1898; member of the Massachusetts Medical Society; served during the World War; formerly associated with the Veterans Administration; aged 74; died, October 8, in Washington, D. C., of acute cardiac dilatation and chronic myocarditis.

Francois Louis Hughes ✠ Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1898; fellow of the American College of Surgeons; served during the World War; on the staff of the Women's Homeopathic Hospital; aged 62; died, October 14, in the Hahnemann Hospital of coronary thrombosis.

Ralph Carleton ✠ Springfield, Mass.; Harvard Medical School, Boston, 1894; member of the American Academy of Ophthalmology and Otolaryngology and the New England Ophthalmological Society; on the staff of the Springfield Hospital; aged 70; died, October 26, of coronary thrombosis.

Howard Meng Lanham, Marshall, Texas; Jefferson Medical College of Philadelphia, 1896; member of the State Medical Association of Texas; served during the World War; aged 66; died, October 7, in the Veterans Administration Facility, Gulfport, Miss., of arteriosclerotic heart disease.

Clermont E. Park ✠ Parkersburg, W. Va.; College of Physicians and Surgeons, Baltimore, 1905; veteran of the Spanish-American and World wars; on the staffs of the Camden-Clark Memorial Hospital and St. Joseph Hospital; aged 69; died, October 10, of chronic myocarditis.

John Ross Smith Martin ⊕ Philadelphia; University of Maryland School of Medicine, Baltimore, 1904; served during the World War; aged 58; for many years on the staff of the Graduate Hospital of the University of Pennsylvania, where he died, October 9, of carcinoma of the colon.

Henry Anthony Baker, Kansas City, Mo.; University of California Medical Department, San Francisco, 1891; member of the Missouri State Medical Association; medical director of the Kansas City Life Insurance Company; aged 70; died, September 17, of acute coronary thrombosis.

George E. Denny, Madison, Ind.; University of Louisville (Ky.) Medical Department, 1893; member of the Indiana State Medical Association; formerly superintendent of the Muscatatuck Colony for feebleminded; at one time member of the state legislature; aged 70; died, October 29.

Fred Paul Weltner, Charleston, W. Va.; College of Physicians and Surgeons, Baltimore, 1915; member of the West Virginia State Medical Association; served during the World War; aged 51; died, August 15, of coronary thrombosis, diabetes mellitus and fracture of the left arm.

Edward Bogard ⊕ Outwood, Ky.; Barnes Medical College, St. Louis, 1904; member of the Washington State Medical Association; served during the World War; on the staff of the Veterans Administration Facility; aged 60; died, October 28, in Louisville of coronary occlusion.

Solomon Simmons Barnett, New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1886; member of the Medical Society of the State of New York; aged 77; died, October 30, in St. Luke's Hospital of carcinoma of the bladder.

Herbert Eugene Simrell, Clarks Summit, Pa.; Medico-Chirurgical College of Philadelphia, 1906; served during the World War; aged 59; died, September 28, in the Veterans Administration Facility, New York, of arteriosclerotic heart disease and prostatic abscess.

Herbert Windham Hewitt ⊕ Detroit; Detroit College of Medicine, 1903; formerly assistant clinical professor of surgery at his alma mater; fellow of the American College of Surgeons; on the staff of the Grace Hospital; aged 65; died in October of coronary thrombosis.

Arthur Francis Barrett ⊕ Jersey City, N. J.; Long Island College Hospital, Brooklyn, 1919; aged 46; formerly on the staff of the Margaret Hague Maternity Hospital and St. Francis Hospital, where he died, October 13, of hypertensive cardiovascular disease.

Robert George Cavanagh ⊕ Muskegon, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1885; for many years on the staffs of the Hackley and Mercy hospitals; aged 82; died, October 29, of chronic myocarditis and arteriosclerosis.

Fred Browne Grosvenor, Columbus, Ohio; University of Michigan Homeopathic Medical School, Ann Arbor, 1911; served during the World War; aged 55; died, October 9, in the Veterans Administration Facility, Wood, of arteriosclerotic heart disease.

Hiram Jackson Clark ⊕ Excelsior Springs, Mo.; Washington University School of Medicine, St. Louis, 1907; past president of the Clay County Medical Society; formerly member of the city council; aged 72; died, October 2, of coronary heart disease.

Lucy Winchell Pine, Washington C. H., Ohio; Laura Memorial Woman's Medical College, Cincinnati, 1897; member of the Ohio State Medical Association; aged 75; died, October 6, in the Harding Sanitarium, Worthington, of cerebral arteriosclerosis.

William H. Kunsman, Morrisville, Pa.; Jefferson Medical College of Philadelphia, 1884; for many years justice of the peace and county coroner; aged 81; died, October 6, in the Mercer Hospital, Trenton, N. J., of cerebral hemorrhage.

John Bennett Jr., Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1898; aged 72; died, October 6, in the Presbyterian Hospital of hypertension, cerebral embolus and hypertrophy of the prostate.

Samuel Sidney Foss, Jeffersonville, Ind.; University of Louisville (Ky.) Medical Department, 1886; member of the Indiana State Medical Association; served during the World War; aged 76; died, October 5, of heart disease.

Victor B. Parowski, Detroit; Loyola University School of Medicine, Chicago, 1918; served during the World War; aged 47; died, October 1, in the Mercy Hospital, San Diego, of pulmonary, laryngeal and intestinal tuberculosis.

Charles Cecil Barr ⊕ Tilden, Neb.; Sioux City (Iowa) College of Medicine, 1907; fellow of the American College of Surgeons; medical director and owner of the Tilden Hospital; aged 56; died, September 29, of heart disease.

Alfred Oliver Gery, East Greenville, Pa.; Jefferson Medical College of Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; aged 75; was killed, October 12, when struck by an automobile.

John Ashby McElwain, Schenectady, N. Y.; Albany Medical College, 1911; member of the Medical Society of the State of New York; served during the World War; aged 55; died, October 6, of coronary sclerosis.

Gilbert Emmings Eddy, Heidelberg, Miss.; University of Alabama School of Medicine, 1907; member of the Mississippi State Medical Association; formerly mayor of Heidelberg; aged 56; died, October 5, of uremia.

Henry Edward Parry, Los Angeles; Hahnemann Medical College and Hospital of Philadelphia, 1893; served during the World War; on the staff of the Veterans Administration Facility; aged 69; died, August 27.

Robert Herschel Geer, El Paso, Texas; University of Texas School of Medicine, Galveston, 1913; member of the State Medical Association of Texas; aged 54; died, October 10, of carcinoma of the liver.

Louis Disler, Canandaigua, N. Y.; St. Louis University School of Medicine, 1936; on the staff of the Veterans Administration Facility; aged 28; died, October 8, following an operation for appendicitis.

Fred Puleston, Daytona Beach, Fla.; State University of Iowa College of Medicine, Iowa City, 1901; member of the Florida Medical Association; aged 75; died, October 7, of cerebral thrombosis.

Alexander Park Boag ⊕ Clearfield, Pa.; Temple University School of Medicine, Philadelphia, 1934; aged 32; on the adjunct staff of the Clearfield Hospital, where he died, October 4, of neuronitis.

Lauris Blake Baldwin, Los Angeles; Northwestern University Medical School, Chicago, 1894; veteran of the Spanish-American and World wars; aged 70; died, October 6, of chronic myocarditis.

John Newton Campbell, Varnville, S. C.; Medical College of the State of South Carolina, Charleston, 1908; aged 62; died, October 15, in the Tri-County Hospital, Orangeburg, of coronary thrombosis.

Martha Magdeline Schaplowsky, Worcester, Mass.; University of Kansas School of Medicine, Kansas City, 1937; aged 40; died, September 14, in Denver of acute myelogenous leukemia.

Cassius H. Fullinwider, Mount Vernon, Ind.; Medical College of Ohio, Cincinnati, 1883; member of the Indiana State Medical Association; aged 86; died, October 11, of arteriosclerosis.

Louis Coblin, Anchorage, Ky.; Miami Medical College, Cincinnati, 1876; aged 88; died, October 2, in the Norton Memorial Infirmary, Louisville, of a fractured hip received in a fall.

John Marcus Koelle, New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1901; aged 63; died, October 1, of chronic myocarditis.

George Middleton Irwin ⊕ Lansdale, Pa.; Jefferson Medical College of Philadelphia, 1933; aged 33; died, October 9, at Bridgeport of tuberculosis.

Isaac Hollen Taylor, Springfield, Ill.; Rush Medical College, Chicago, 1871; aged 90; died, September 27, of coronary occlusion and arteriosclerosis.

Charles Birdsall Pearson, Anaheim, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1886; aged 77; died recently.

Effie C. Munro Paul, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1893; aged 70; died, September 30, of carcinoma.

Harold Eugene Sheldon ⊕ Troy, N. H.; Boston University School of Medicine, 1936; aged 40; died, September 25, of carcinomatosis.

Charles J. Meyer, Denver; Kaiser-Wilhelms-Universität Medizinische Fakultät, Strassburg, Germany, 1874; aged 87; died, October 13, of cerebral hemorrhage.

Cicero F. Faulkner, Whitney, Texas; Louisville (Ky.) Medical College, 1898; aged 70; died, October 11, of carcinoma.

Bureau of Investigation

TWO "BUST DEVELOPERS" CEASE DEVELOPMENT

1. Curtis A. Davis and His Personal Collection of Fraud Orders

2. Gloria Mauro's "Firmform" Not so Firm

"Bust developers," whether in the form of mechanical devices, massage creams or internal treatments, have again and again been debarred from the mails by the Post Office Department. Though some promoters may have closed up shop, one notorious offender has repeatedly dodged the government's edicts against him.

The Davis-Cook Swindle

In this department of THE JOURNAL, March 5, 1938, appeared a discussion of the Post Office fraud order issued in July 1937, which debarred from the mails the Youth-Aid Products of Los Angeles. The article showed that this was a new name adopted by an old-time swindling outfit, the Jennie L. Cook Company, to circumvent a similar fraud order that had been issued against the same promoter in January 1936. The article further brought out the facts that the Curtis A. Davis who was the moving spirit in this concern had originally promoted other mail-order swindles from Chicago, that the first fraud order had been issued against him as long ago as August 1916, and that he had evaded it by changing most of the firm names under which he had been doing business, so that the Post Office found it necessary to issue a supplementary fraud order against him in January 1917 to cover these new names.

In time Davis transferred his nefarious activities to Los Angeles. According to the Post Office he once stated that he used the title "Jennie L. Cook Company" because Jennie L. Cook was the name of his sister, who lived next door to the rooming house from which he conducted his business, but he claimed she had no financial interest in the fraud. The Cook trade style was one he had long employed in his Chicago schemes.

In 1932 another government agency, the Federal Trade Commission, issued a Cease and Desist Order against Curtis A. Davis, trading as the Jennie L. Cook Co., Los Angeles. In this Curtis was ordered to (1) cease advertising as a woman; (2) cease implying in his advertising that the statements he made were from one woman to another; (3) cease claiming that the Jennie L. Cook Company was composed of Parisian beauty culturists; (4) cease advertising that the Cook "treatment" was scientific, was made from a French formula and was a constitutional vitalizer and a tissue builder; (5) cease claiming that by the use of the "treatment" a perfect figure could be developed and the human body could be properly proportioned, and (6) cease claiming that the "treatment" would fill up hollows in the body, give the user strength and remove wrinkles. The facts were briefly noted in this department of THE JOURNAL, April 30, 1932.

Considering Davis's record in quackery, it was hardly to be expected that he would regard this latest pronouncement from the government too seriously. Hence it is not surprising that his name bobbed up again in 1936 in a Post Office fraud order and in 1937 in another, which was later supplemented by still another fraud order. The fact is that the Federal Trade Commission itself was obliged to bring a second action against Davis, as the result of which it announced on Nov. 25, 1939, that it had got him to sign a stipulation promising to discontinue certain lies in his advertising. Among these were that his "Jane Cook's Wonder Tissue Creme" will furnish nourishment to the tissues or cells or increase the size of the bust, or that a flat chest is due to a lack of nourishment in the tissue cells of the chest or to the fact that in a case of flat chest the cells are shrunken or collapsed. Davis further agreed to cease representing that his product was in fact a "tissue" cream, either by using that word in the name of a product or otherwise. A New York concern which handled advertising for Davis also was prevailed on to promise similarly to withdraw these false claims for the nostrum.

But Davis, with the brazenness of a habitual law-breaker, continued to defy governmental restraints on his swindles. A new name, The Alvin Sales Co., entered the picture as Davis's latest trade style. Again the Post Office made an investigation, which revealed that Davis's latest exploitation, the "Jane Cook Beauty Aids," included his old "bust developer" fraud, that the latter was now being put out as the "Jane Cook Method" and that it consisted of the "Wonder Tissue Creme" and "Wonder Tonic Tablets," these last for internal use. A government chemist testified that the cream was made up of wool fat, fatty oil, a minute amount of ash and 28 per cent of water and that each tablet contained 1 grain of ferrous carbonate with alkaloids, including brucine and strychnine amounting to about one-sixth grain of nux vomica. One tablet was to be taken twice daily and the cream was to be massaged on the breasts. As medical evidence introduced at the Post Office hearing showed that this combination treatment would produce practically none of the effects on the breasts claimed in Davis's advertising and that the preparations in question were practically identical with those named in previous fraud orders, a new one was issued against the names Curtis A. Davis, C. A. Davis, Jane Cook Method and Alvin Sales Co. on March 2, 1940, and postmasters were instructed to return to all senders when known (or when not known, to send to the Dead Letter Office) all letters addressed to the names given.

But soon afterward Davis again was found to be evading the fraud order, once more using a new name, "Mrs. J. Cook," under which title he continued to solicit prospective victims with literature on his "Wonder Tonic Tablets" and "Jane Cook's Massage Creme" for the development of the female figure. Hence on the recommendation of Judge Vincent M. Miles, Solicitor for the Post Office Department, on March 14, 1940, the recently issued fraud order was extended to cover the name of Mrs. J. Cook, Los Angeles.

Thus Davis and the Post Office seem to be engaged in one continuous bout of many rounds. Of course, there ought to be some way to terminate the necessity for such repetition of effort on the part of the Post Office Department in protecting the public. But since there apparently is no such mechanism, one can only hope that the postal authorities will not become disgusted or discouraged about the whole thing. After all this may help the unemployment situation at least as far as the Post Office Department is concerned. In these parlous times such accounts as this help to add to the gaiety of reflections on our government's legal activities.

The Gloria Mauro Fraud

Another "bust developer" swindle which emanates from Los Angeles was promoted as a "bust normalizer"—to build up underdeveloped breasts to normal size or to restore enlarged or sagging breasts to their former contour. This business was conducted by one John Frank Mauro operating under the names Gloria Mauro, Gloria Mauro Products and Gloria Mauro Company. It is reported that he started his scheme in Hollywood in December 1936 and also established an eastern sales agency in New York which eventually was discontinued. It appears that some time in 1937 Mauro, accompanied by his wife, went to Belgium and still resides there. Prior to going, it is said, he gave one Florence Whittle power of attorney to act as his legal representative and to continue the business in his absence.

The Post Office Department properly looked into Mauro's swindle and in a memorandum on the case Hon. W. E. Kelly, Acting Solicitor, brought out the foregoing facts and some others. He showed that neither Mauro nor Miss Whittle possessed any medical training or employed a physician or any one else possessing medical knowledge. The "treatment," a device known as the "Gloria Firmform," was described in the memorandum as follows:

> The "Gloria Firmform," which costs the promoter $3.50 to manufacture, is a metal, cup-shaped apparatus designed to fit over the breast. Attached to the top is a rubber hose to be connected with a water faucet. Water entering the device through the hose is expelled upon the base of, and about the breast in numerous, needle-like sprays. Leading from the apparatus is a metal outlet for water introduced therein by the hose. Directions for use sent with the device read in part as follows:
>
> "The Gloria Firmform is ready for use when taken from the package. In using, simply attach the hose connector to any convenient cold water faucet. Press the Firmform snugly against the body, covering the breast, and with sufficient firmness to prevent water seepage around the rim. Turn on the water with the fullest force available. . . .
>
> "The length of time required and the degree of success attained varies, of course, with the degree to which the breasts are underdeveloped, have sagged, aged, condition of health and size of

breasts. However, the tonic effect will be noticed quickly and two or three weeks' regular use of Firmform usually indicate the beginning of improvement that convinces the user that she should follow the directions faithfully until the bust fills, firms and assumes the contours so greatly desired by every woman.

"FOR DEVELOPMENT

"The woman with flat, underdeveloped breasts, if in normal health, need not usually despair of ever being beautiful of form . . . of having the lovely, full, firm-pointed breasts that so few women have and yet so many could develop with the proper method and care."

The memorandum went on to show that, according to expert medical testimony in the case, the only effect which this device could produce if used according to the directions furnished would be a stimulation of the skin overlying the breasts through the action of the cold water, thus temporarily increasing the circulation of the blood in that region. This testimony showed, further, that the size, shape and contour of the female breasts depend on the amounts of fat and the glandular and fibrous tissues deposited within them. Hence the application of cold water by means of the "Gloria Firmform," even over a long period, would have no effect whatever on the physiologic factors that determine the amounts of these fatty and glandular tissues in the breasts. Further, fatty depositions in the breasts of these persons naturally would cause sagging or pendulous breasts and the mere application of cold water to the overlying skin of these organs could not correct their sagging.

Some of the expert medical testimony referred to in the memorandum aptly summarizes the worthlessness of such a treatment as follows:

". . . in order to accomplish the promised results in both these types of cases, the temporarily increased flow of blood brought about by the cold water principle of the 'Gloria Firmform' would, in the one case, have to bring about an increased deposition of fat cells, and of glandular and fibrous tissues, and in the other, accomplish the diametrically opposite effect of removing the excess fatty and other deposits responsible for the sagging, pendulous condition. According to the medical evidence, neither the 'Gloria Firmform' nor any other single, uniform method of external treatment can operate to produce such opposing results."

The fraud order against Gloria Mauro, Gloria Mauro Company and Gloria Mauro Products was issued Nov. 3, 1939.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ARTIFICIAL LIGHTING AND WINDOWLESS BUILDINGS

To the Editor:—**The National Defense Commission has many million dollars' worth of contracts pending for industrial buildings. In designing these the architects have attempted to make them of a "blackout" type. One way of doing this is to use windowless structures equipped completely with artificial light and air conditioning. Have you run across any industrial health reports, either from this country or from England, which would throw light on these questions: 1. Does the long time use of artificial light to the exclusion of natural light have any harmful effect on the eyes of workers? 2. Do windowless factories cause claustrophobia among workers? In case of an air raid would panic be more prevalent among workers in windowless buildings than in glazed buildings? (If there are any studies on claustrophobia among submarine crews, these might help answer this question.) 3. What effect does work in air conditioned windowless factories have on the sickness rate of employees? (We have seen some reports on health in air conditioned offices but don't recall any on health in air conditioned, windowless factories.)**

W. G. Hazard, Toledo, Ohio.

ANSWER.—No one of these questions can be answered categorically and without recognition that many circumstances other than the exact ones mentioned influence the situation.

1. The long time use of artificial lighting to the exclusion of all natural light may have a harmful effect on the eyes of workers, but foremost because of the inadequacy or unsuitability of the artificial lighting provided. Until recently there has been no form of artificial lighting that compared favorably with daylight. Even now statements as to parity must be accepted with reserve. S. W. Fisher (*Lancet* **1**:668 [April 6] 1940) compares the total incidence and incident rate of miners nystagmus, which long has been England's foremost occupational disease, for the years 1930 to 1938 inclusive. In the first mentioned year, 3,066 new cases of miners' nystagmus appeared, constituting a rate per thousand of 4.15, while in 1938 the total number of new cases was 1,019, which provided a rate of 1.66. The only difference in work conditions has been the introduction of better illumination. The essence of this comment is that inadequate artificial illumination is the basis for nearly all unfavorable comparisons between natural and artificial lighting. In England, Patmore (*Indust. Welfare* **21**:387, 1939), writing of efforts to meet the requirements of defense lighting, points out the necessity for high standards of illumination in order even to approach daylight and recommends high pressure mercury vapor lamps. This author notes that visual acuity is greater with this form of artificial illumination, in contrast to the tungsten lamp, in which it is stated that the maximum output is in the infra-red band, to which the visual apparatus of the eye is little responsive. The Industrial Health Research Board of England's Medical Research Council, in its first emergency report, entitled "Industrial Health in War," notes that some fine industrial work, particularly in persons with trivial eye defects, cannot be done with the best of lighting unless special optical aids are provided. Such operations call for industrial magnifiers, binoculars and at times the provision of corrective lenses for otherwise negligible deficiencies. It is now known from the work of Ferree and others (*Personnel Journal* **14**:18 [May] 1935) that the illumination requirements for various age classes of persons are different. Thus a youthful group might attain a high level of acuity at 10 foot candles without any definite increase with augmented lighting. This is not true for workers of middle and early old age, whose lighting requirements are on a different level. With the advent of fluorescent lighting, with high intensity, absence of glare and a minimum of disturbing shadows, it is now possible to meet all the visual requirements of daylighting, but while artificial illumination may be made the equal or even the superior of daylight in selected enterprises, such as department store work, it should not be inferred that all the beneficent purposes served by sunlight are met.

2. Current comment on windowless air conditioned work places implies that such structures are radically new. Overlooked is the fact that most theaters are windowless, ventilated or air conditioned creations and that the counterpart of a windowless ventilated factory can be found in any mine. At this time every factory in Great Britain and other portions of the warring world has been made into a semiwindowless affair through the requirements of the blackout, much of which is described in the British Home Office Factory Department Publication entitled "Factory Ventilation in the Blackout." It is common experience that claustrophobia is not of common occurrence among theater patrons. On the other hand, few persons enter a mine or descend into a well without some anxiety. Claustrophobia is not a disease entity and certainly the mild apprehension which is the lot of most persons confronted with strikingly unusual physical surroundings cannot be regarded as significant. On moving into any new factory or office quarters of the windowless or opaque glass tile type of structure, fair numbers of all employees become more aware of air conditions, lighting and odors. In Detroit the Detroit Edison Company lately has constructed a large office building of highly modern design, completely air conditioned, with opaque glass tiles, permitting the entry of light but preventing any vision from within or without. During the early months after occupancy there arose many complaints from older women, and particularly scrub women working at night, protesting against being "put in a box." All such apprehension disappeared after a few months. In England this sort of situation has become associated with "gas obsessions." Owing to numerous breaks in gas lines there has been some warrant for anxiety on entering closed spaces. However, anxiety hysteria about gas dominates the picture. Usually these mild states are transitory and unimportant. When the anxiety is severe or prolonged, adequate inquiry ordinarily will establish causative connections wholly unrelated to physical surroundings. Among psychoanalysts the belief holds that all phobias, such as claustrophobia and agoraphobia, always represent an unconscious feeling of guilt resulting from an early disagreeable memory.

3. The intent of this comment is to recognize the possibility of a little "jumpiness" on the part of workers newly moved into windowless air conditioned work places but to deny the probability of creating any significant pathologic state by this type of architecture. When disturbing anxiety arises, fundamental causes should be sought in other places than windowless walls. See War Neuroses (London Letter, THE JOURNAL, Feb. 3, 1940, p. 424). In the case of submarine crews, the numerous excitants to anxiety preclude any possibility of segregating claustrophobia as an entity.

ALLERGIC SHOCK

To the Editor:—A man aged 37 of western Kansas was recently admitted to a local hospital complaining of numbness and tingling of the hands and feet and acute erythema, weakness, nausea and vomiting of about four hours' duration. The first attack was noted by the patient five years ago, during which he became dyspneic and cyanotic and fainted. He had severe substernal pressure with the first attack but has not had such a symptom since. He has about one or two attacks a year, usually in the spring and fall, and each attack is more or less typical. It begins with an erythema and a generalized sensation of warmth, which gradually increases and deepens to a maximum in anywhere from one-half hour to thirty-six hours. Attacks are always attended by severe bronchial secretion which is clear and contains no pus, also by nausea and vomiting. The present attack was the first in which he had numbness and tingling of the hands and feet. He has no pain during these attacks but usually has a slight headache for the following twenty-four hours. He is sick on the second day but is usually well and able to return to work by the third day. He has had chills and fever with each attack. He has had extensive laboratory studies and investigation from the standpoint of allergens, blood and urinalysis, gallbladder and gastrointestinal tract, x-ray and fluoroscopic studies, all of which have been normal. Extensive cutaneous tests were normal except for reaction to a few foods to which the patient showed sensitivity and which he has since avoided. When first seen by me the patient had an acute generalized erythema, his blood pressure was 60 systolic, 30 diastolic, and his pulse was rapid and thready. The skin, however, was hot and moist, and the patient was chilling vigorously and complained of being cold. He was given the supportive measures for shock and responded well, so that in about thirty minutes he felt much better and his nausea and vomiting had subsided to a mild degree. During the vomiting he regurgitated some undigested potato which he had eaten some ten hours previously. Urinalysis was not remarkable except for a heavy trace of albumin and numerous hyaline and granular casts. The white blood cell count was 13,550 with a normal differential. I suspected an allergic reaction, possibly a histamine-like reaction, as the cause of the condition, but I was not able to make a diagnosis and the patient states that his family physician has never arrived at a diagnosis. I should like to have an opinion as to the cause of this syndrome and would appreciate any suggestions you may have as to its treatment. M.D., Colorado.

ANSWER.—This interesting case offers a real diagnostic problem. The fall in blood pressure and other symptoms indicate the presence of some form of shock, although in shock fever and leukocytosis are not common. Since the attacks occur at long intervals and last only two or three days, and since there is complete freedom from symptoms between attacks, one is forced to conclude that there is no organic disease. Therefore the patient must have some nonorganic trouble or must be poisoned by some food. Food poisoning is possible although not likely.

A severe allergic reaction with shock is probably present. In favor of this diagnosis are (1) the severe bronchial secretion, (2) the erythema (pruritus is often associated), (3) the acuteness of the onset, (4) the relatively short duration and (5) the fall in blood pressure. Eosinophilia of the blood and sputum are usually present but are not necessary to make the diagnosis. Fever is uncommon, but can occur in severe allergic conditions.

Granted that the patient is allergic, it seems likely that the cause of the attacks is some substance to which the patient is exposed infrequently. This could be a food which he eats rarely or could be some inhalant, e. g. horse dander, dog hair, orris root (perfume) or perhaps a drug, such as acetylsalicylic acid, quinine or some hypnotic. Tests should be made both cutaneously and intracutaneously not only for the common antigens but also for the rare ones, e. g. karaya gum (wave set), Brazil nuts, mango and artichokes. Cutaneous tests for drugs are unsatisfactory. Instances of severe allergic shock to rare antigens are not uncommon and death has occurred occasionally from such substances as peanut butter, poppyseed, Brazil nuts, glue or some drug. The patient should keep a food record and should also record any unusual exposures to animals, drugs or the like. Epinephrine should be administered for any further attacks.

TONSILLECTOMY AND HEMORRHAGE PREVENTION

To the Editor:—I have told a family that outside of seeing that a child is in the best physical condition, and provided the coagulation time is normal, there is nothing to be given preoperatively to prevent bleeding in a tonsillectomy, should the technic be good. A relative's doctor has informed them that I was wrong. Consequently for the family's benefit I would appreciate it if you would reply to this question.

Sidney Schreiber, M.D., Forest Park, Ill.

ANSWER.—This question has been the subject of many discussions, conferences and literary contributions by laryngologists all over the world. The advice given is basically sound and is the method used by the majority of specialists. Indeed, many men do not even have the coagulation time taken unless the history warrants it. The essential points are a good history, physical examination and the drawing of inferences and conclusions as to the operative fitness and condition of the child.

If the history is such as to suggest an inquiry into the possibility of postoperative hemorrhage, then appropriate blood studies should be made including coagulation, bleeding time and platelet count. Though such studies are important, it must be remembered that they are often not reliable, and too much attention should not be paid to them. Where the observations fall far below normal, certain precautions may be undertaken preoperatively. Parenteral injection of small amounts of horse serum or whole blood, or even larger amounts of blood by transfusion when anemia is also present, may be employed to shorten coagulation or bleeding time. Where serum is employed, allergic sensitivity must be ruled out, although the principle of sensitization to a foreign protein (requiring about ten days) has been suggested as a means to prevent the occurrence of hemorrhage in hemophilia by subsequent intradermal administration of the protein to increase the coagulability of the capillary blood. The intradermal injections do not desensitize the patient. In thrombocytopenic purpura, blood transfusion is an effective means of restoring the platelet count to normal or near normal. Even in hemophilia surgery can be safely undertaken if transfusions are given during the operation and healing period, to hold the coagulation time near normal. The use of blood or serum as prophylaxis against hemorrhage is probably more effective than the use of calcium salts, estrogens and placental or other tissue extracts. The Council on Pharmacy and Chemistry has not accepted for New and Nonofficial Remedies any of these preparations as effective prophylactic agents against hemorrhage, except nonimmune horse serum. Thromboplastic substances are recognized by the Council for local use in the treatment of hemorrhage from oozing surfaces, as is also the use of iron compounds for their styptic or astringent properties. The Council has deferred consideration of the use of snake venom as a parenteral hemostatic agent in the treatment of hemorrhagic conditions because of the meager evidence available. The experience recently reported concerning the effectiveness of Koagamin (a compound containing oxalic and other dicarboxylic acids derived from the plant shepard's purse) as a prophylactic parenteral coagulant is insufficient to warrant more than experimental use until further evidence becomes available. Some years ago the Council declared Styptysate, another proprietary hemostatic prepared from shepard's purse, not acceptable for New and Nonofficial Remedies.

Each case requires individual study, observation and evaluation and must be dealt with accordingly. There are a number of eminent laryngologists who hold exactly the same opinion that has been expressed by the inquirer.

DURATION OF POSITIVE BENZIDINE TEST AFTER GASTROINTESTINAL BLEEDING

To the Editor:—A question arose on ward rounds as to the duration of the positive guaiac or benzidine test on the stool after the cessation of active bleeding in the gastroduodenal region and elsewhere in the gastrointestinal tract. References would also be appreciated.

Victor F. Lief, M.D., Far Rockaway, N. Y.

ANSWER.—The figures given by various authors for the average duration of a positive benzidine test for occult blood in the stool following hemorrhage from a peptic ulcer are in general agreement. This period was 13.6 days in eighty cases recently reported by Turnbull and Sagi (*Am. J. Digest. Dis. & Nutrition* **6**:92 [April] 1939). Meulengracht (*Lancet* **2**:1220 [Nov. 30] 1935) found that an average of 13.4 days with 4.5 defecations elapsed before the stools were entirely negative with Gregersen's benzidine test on the "old form" of treatment of bleeding peptic ulcers and that an average of 10.2 days elapsed with 4.8 defecations when the Meulengracht treatment was employed. The latter group consisted of 251 cases. The difference of approximately three days in the duration of positive benzidine reactions was not taken as an indication of a shorter period of bleeding. Noth and Wilbur (*Proc. Staff Meet., Mayo Clin.* **10**:824 [Dec. 26] 1935) found the average duration of a positive benzidine reaction in five cases to be ten and a half days from the time of admission. Presumably hospitalization was soon after the onset of hemorrhage. It should be noted that figures for average duration are not directly applicable to an individual case. Schiodt (*Am. J. M. Sc.* **193**:313 [March] 1937) gives the average time as 13 plus or minus 2.5 days. In individual cases his tables (p. 327), however, show that the variation was from five to forty-four days.

Since the passage of food through the gastrointestinal tract requires considerably less time than from ten to fourteen days, the question arises as to whether the hemorrhage usually extends over a period of days. Meulengracht (*Brit. M. J.* **2**:321 [Aug. 12] 1939) believes that "actual bleeding as a rule can last only a short time, perhaps only a few hours," and that the prolonged positive benzidine test is an indication of the time required for the intestine to rid itself of blood rather than an

indication of the duration of hemorrhage. In support of this view Meulengracht cites the work of Hesser (*Acta med. Scandinav.* supp. 59, p. 367, 1934) that patients with bleeding peptic ulcer gave evidence of having barium salts in their stools for from eight to twenty-one days following a barium sulfate meal.

Although a single hemorrhage of not more than a few hours duration may be the rule in peptic ulcer, it does not exclude the possibility that in some cases the bleeding may be more prolonged or may recur, as evidenced by the vomiting of bright red blood several days after the initial hematemesis or melena. However, the average figures are of value in an individual case in that when the stools become negative with the benzidine test it is known that the bleeding probably stopped from seven to fourteen days before.

Hemorrhage from lesions in the gastrointestinal tract other than that from peptic ulcers and esophageal varices is apt to be prolonged and with an indefinite termination. This applies particularly to hemorrhage arising in lesions of the colon. It is therefore extremely difficult to determine the duration of a positive benzidine test after the hemorrhage has ceased; however, it seems reasonable to think it would be somewhat less than that in hemorrhage from peptic ulcers.

BILATERAL PNEUMOTHORAX AND INTRA-ABDOMINAL SURGERY

To the Editor:—**A woman aged 50 has bilateral pulmonary tuberculosis for which she is receiving bilateral pneumothorax therapy. At present her sputum is negative and the pulse rate and temperature are normal. She also has been having severe attacks of pain in the right hypochondrium presumably due to gallbladder disease. She has not responded to diet and medication. X-ray studies of the gallbladder have not been made. If further examination reveals the condition to be due to cholecystitis or cholelithiasis, would surgery be contraindicated because of the presence of bilateral pulmonary tuberculosis? If surgery is contraindicated, what alternative therapy would you suggest for the gallbladder condition?**

Daniel Haffron, M.D., Elgin, Ill.

ANSWER.—Artificial pneumothorax, even bilateral artificial pneumothorax, is not an absolute contraindication to urgent abdominal surgery. Such surgery should be resorted to only when there is an urgent indication and when the diagnosis of abdominal disease is absolutely certain and specific. Patients with pneumothorax frequently have pleuritic pain which radiates into the upper part of the abdomen and which may even cause localized tenderness and spasm.

The patient in question might be operated on at the present time only if x-ray studies give certain evidence of the diseased gallbladder and the attacks are so frequent and severe as to threaten complications and as to be unendurable.

THREATENED ABORTION

To the Editor:—**A woman aged 31 was not able to conceive for seven months. A basal metabolic test showed — 17; the pulse was 60, blood pressure was 96 systolic, 60 diastolic, the Wassermann reaction negative. Thyroid substance from one-half to 3 grains (0.03 to 0.2 Gm.) was prescribed. At the time the next period was expected the patient complained of pains low in the abdomen, typical of the menstrual period. After six days of intermittent cramps and no showing of the period (the patient claimed a variation of only one to three days in the cycle) five daily injections of progesterone of 1 international unit each were given. The cramps subsided. For the first three months of pregnancy the patient had severe nausea and some vomiting. The thyroid dose of from 3 to 4 grains (0.2 to 0.26 Gm.) daily was continued. On entering the fourth month she noticed a bloody discharge of from 1 drachm (4 cc.) to 1 ounce (30 cc.). The patient was advised to take bed rest, and 5 international units of progesterone was used daily. She has been in bed for three weeks and the discharge has not diminished. In addition cramps are felt intermittently and at times they are so severe that codeine is necessary. Treatment still consists of 5 international units of progesterone daily, from 3 to 4 grains (0.2 to 0.26 Gm.) of thyroid, and vitamin E administered orally. Her basal metabolism is now — 7. Is this therapy satisfactory? Have you any other suggestions? What are the chances of a successful full term pregnancy?**

M.D., New York

ANSWER.—The patient has been bleeding continuously for at least three weeks in spite of treatment, so that the present status of the gestation should be determined. It is possible that the treatment has caused a delay in the natural evacuation by the uterus of an abnormal gestation. This is a rather common occurrence at the present time. It is entirely possible that the fetus has been dead for some time and is being retained in the uterus. Rarely a hydatidiform mole may produce a clinical picture such as that described. A hormonal test for pregnancy and a careful vaginal examination will determine whether the gestation is normal.

The management which has been followed in this case represents an example of acceptable therapy. Threatened or habitual abortion may be treated by a sufficient amount of thyroid to bring the basal rate to normal, progesterone and possibly vitamin E in the form of wheat germ oil. Synthetic vitamin E, alpha-tocopherol, is available for experimental work but is not yet available for clinical use. One must remember that many abortions occur as a result of abnormal embryos or chorions. Of course, it is useless to prolong one of these abnormal pregnancies. Furthermore, the onset of bleeding and particularly its continuation over a period of a week or longer is often indicative of serious damage to the embryo or gestational sac. It is unwise to continue conservative treatment over too long a period for this reason. Recent statistics indicate that if a pregnancy which has threatened to abort continues to term there is no increased likelihood of malformed fetuses.

BUTOLAN FOR PINWORMS

To the Editor:—**Since 1924 I have on occasion used butolan in the treatment of pinworm infestations. I used it as recommended in George Blumer's edition of Billings-Forchheimer's Therapeusis of Internal Diseases. The results have been uniformly successful and no bad effects have been noticed. (Quassia enemas were used in conjunction.) I now have a patient recovering from postpneumonia empyema who is infested. She is 9 years old. Is there any reason why butolan should not be used? I have never seen it mentioned in The Journal.**

George Braunlich, M.D., Davenport, Iowa.

ANSWER.—No contraindications for the use of butolan have appeared in the limited literature on this drug; in fact, the users of butolan claim that it has been without any untoward effects.

The articles by Schickhardt (*München. med. Wchnschr.* **67:** 722 [June 18] 1920) and Francke (*Med. Klin.* **16:**758 [July 18] 1920) were the first to be published on the use of this drug for the treatment of oxyuriasis. They claimed good results but their criteria of cure were based on the alleviation of symptoms and on stool examinations rather than on an anal swab technic, which today is regarded as the most reliable procedure for the diagnosis of oxyuriasis. Other notes and articles apparently have been based on the results of these investigators.

At the present time the drug of choice for the treatment of oxyuriasis appears to be gentian violet given orally, as reported by W. H. Wright and F. J. Brady of the United States Public Health Service (THE JOURNAL, March 9, 1940, p. 861).

DIVISION OF SAPHENOUS VEIN IN VARICOSE ULCER OF LEG

To the Editor:—**A white man aged 40 had varicose veins injected about ten years ago. A varicose ulcer appeared over the lower third of the same leg nine months ago following the gradual reappearance of the varicose veins. I suggested rest off his feet, which he refused, and he has been since under other doctors' care with various ointments without results. I am wondering whether there is a contraindication for the ligation of the internal saphenous vein because of the presence of the ulcer and also what suggestions can be offered for the handling of this problem.**

M.D., Connecticut.

ANSWER.—The high division of the long saphenous vein and its tributaries at the groin is indicated in the presence of a leg ulcer when (1) there is no acute inflammation at the site of the ulcer, (2) acute lymphadenitis is not present in the groin, (3) there is evidence of marked reflux of blood through incompetent valves of the long saphenous vein and (4) there is no evidence of deep venous obstruction. The last contraindication seldom exists, for even if there is a good history of deep thrombophlebitis the thrombus frequently canalizes or is compensated by deep venous collaterals. The ulcer may not heal even after the high division of the saphenous vein and obliteration of the distal segment by injections if there is a severe thrombophlebitic induration surrounding the ulcer. If such is the case, weekly applications of glycerin-gelatin casts may be helpful in softening the induration and healing the ulcer. For resistant ulcers it may be necessary to resort to a major surgical procedure consisting of a wide excision of the fibrosed connective tissue, including the fascia.

SENSITIZATION TO DIGITALIS

To the Editor:—**In reference to sensitization to digitalis (Queries and Minor Notes, The Journal, Sept. 28, 1940, p. 1122) there is little or nothing mentioned about systemic reactions but there are some reports of cutaneous response. A dermatitis may result from the external application of the fresh leaves of foxglove. The ingestion of this drug may cause macular and papular eruptions (Hyde), an erysipeloid eruption (Traube, Schuchardt) and a generalized erythroderma (Morrow, P. A.: Drug Eruptions; Selected Monographs in Dermatology, New Sydenham Society edited by T. Colcott Fox, London, 1893). There are a few other old references on cutaneous eruptions from the ingestion of digitalis. The following two are more recent: Pulch, A.: *Montpellier méd.* 73:235 (April 15) 1930. Brandt: *Dermat. Wchnschr.* 104:726 (June 12) 1937.**

E. William Abramowitz, M.D., New York.

Medical Examinations and Licensure

COMING EXAMINATIONS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examination of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, November 23, page 1824.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Various centers, February. Part III. Boston during November. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various centers, Feb. 20. Final date for filing application is December 21. *Oral.* Part II. Cleveland, May 31-June 1. Final date for filing application is April 1. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral.* Chicago, Dec. 6-7. Applications for Group A are closed. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Parts 1-A and 1-B, Feb. 17. Final date for filing application is Jan. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Part II, Groups A and B, Cleveland, May 28-June 1. Final date for filing application is March 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Cleveland, May or June. *Written.* Various centers, March 8. *The only written examination during 1941.* Applications must be on file not later than Dec. 1. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF PATHOLOGY: *Oral and Written.* Cleveland, June 1-2. Final date for filing application is May 1. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: New York, March 30-31, following the Region I meeting of the American Academy of Pediatrics. Chicago, May 18, following the Region III meeting of the American Academy of Pediatrics. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF RADIOLOGY. *Oral.* Cleveland, May 30-June 1. Final date for filing application is April 15. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

Alabama Reciprocity Report

Dr. J. N. Baker, secretary, Alabama State Board of Medical Examiners, reports twenty-one physicians licensed to practice medicine by reciprocity from April 25 through September 25. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1937), (1939)	Georgia
Tulane University of Louisiana School of Medicine		(1929), (1938, 2), (1939)	Louisiana
Johns Hopkins University School of Medicine		(1931)	Maryland
Harvard Medical School		(1928)	Ohio
University of Michigan Medical School		(1936)	Michigan
Washington University School of Medicine		(1938, 2)	Missouri
University of Cincinnati College of Medicine		(1934)	Ohio
University of Oklahoma School of Medicine		(1938)	Oklahoma
Hahnemann Med. College and Hospital of Philadelphia		(1937)	Penna.
Medical College of the State of South Carolina		(1939)	S. Carolina
University of Tennessee College of Medicine		(1931), (1937, 2)	Tennessee
Vanderbilt University School of Medicine		(1938), (1939)	Tennessee
Queen's University Faculty of Medicine		(1938)	New York

Pennsylvania July Report

Miss Marguerite G. Steiner, acting secretary, Bureau of Professional Licensing, reports the written examination for medical licensure held at Philadelphia and Pittsburgh, July 9-13, 1940. The examination covered five subjects and included fifty questions. An average of 75 per cent was required to pass. Four hundred and seventy-two candidates were examined, 450 of whom passed and twenty-two failed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
College of Medical Evangelists		(1935), (1939), (1940)	3
Yale University School of Medicine		(1939)	1
George Washington University School of Medicine		(1939, 2)	2
Georgetown University School of Medicine		(1938), (1939, 10)	11
Howard University College of Medicine		(1939, 4)	4
Loyola University School of Medicine		(1940, 2)	2
Northwestern University Medical School		(1939), (1940, 3)	4
Rush Medical College		(1939)	1
Indiana University School of Medicine		(1937)	1
University of Louisville School of Medicine		(1939, 2)	2
Tulane University of Louisiana School of Medicine		(1939)	1
Johns Hopkins Univ. School of Medicine		(1938, 2), (1939, 3)	5
University of Maryland School of Medicine and College of Physicians and Surgeons		(1938, 4), (1939, 3)	7
Harvard Medical School		(1935), (1938, 2), (1939, 2)	5
Tufts College Medical School		(1938), (1939)	2
University of Michigan Medical School		(1939)	1
St. Louis University School of Medicine		(1939, 3)	3
University of Nebraska College of Medicine		(1939)	1
Cornell University Medical College		(1930), (1938), (1939, 2)	4
University of Buffalo School of Medicine		(1939, 2)	2
Univ. of Rochester School of Medicine and Dentistry		(1939)	1
Duke University School of Medicine		(1939)	1
Eclectic Medical College, Cincinnati		(1939, 5)	5
Western Reserve University School of Medicine		(1939, 2)	2
University of Oklahoma School of Medicine		(1938)	1
Hahnemann Medical College and Hospital of Philadelphia		(1938, 2), (1939, 66)	68
Jefferson Medical College of Philadelphia		(1937, 3), (1938, 20), (1939, 49), (1939, 2)*	74
Temple University School of Medicine		(1936), (1938, 17), (1939, 61)	79
Univ. of Pennsylvania School of Med.		(1937, 3), (1938, 26), (1939, 42)	71
Univ. of Pittsburgh School of Medicine		(1938), (1939, 49)	50
Woman's Medical College of Pennsylvania		(1938), (1939, 11)	12
Medical College of the State of S. Carolina		(1938), (1939, 3)	4
University of Tennessee College of Medicine		(1939, 2)	2
University of Texas Faculty of Medicine		(1939)	1
University of Texas School of Medicine		(1931)	1
University of Virginia Department of Medicine		(1938)	1
Marquette University School of Medicine		(1939)	1
Dalhousie University Faculty of Medicine		(1939)	1
University of Toronto Faculty of Medicine		(1930)	1
McGill University Faculty of Medicine		(1939, 2)	2
Medizinische Fakultät der Universität Wien		(1924, 2)	2
Hamburgische Universität Medizinische Fakultät		(1938)	1
Regia Università degli Studi di Perugia. Facoltà di Medicina e Chirurgia		(1937)	1
Regia Università di Napoli Facoltà di Medicina e Chirurgia		(1938, 2)	2
Licentiate of the Royal College of Physicians, of the Royal College of Surgeons of Edinburgh and of the Royal Faculty of Physicians and Surgeons of Glasgow		(1937)	1
University of Glasgow Medical Faculty		(1929)	1
Universität Basel Medizinische Fakultät		(1937), (1938)	2

School	FAILED	Year Grad.	Number Failed
St. Louis University School of Medicine		(1939)	1
Hahnemann Med. College and Hosp. of Philadelphia		(1939, 10)	10
Temple University School of Medicine		(1939,2)	2
University of Pittsburgh School of Medicine		(1939, 2)	2
University of Virginia Department of Medicine		(1938)	1
Medizinische Fakultät der Universität Wien		(1933)	1
Christian-Albrechts-Universität Medizinische Fakultät, Kiel		(1913)	1
Ludwig-Maximilians-Universität Medizinische Fakultät, München		(1938)	1
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest		(1915)	1
Regia Università di Napoli Facoltà di Medicina e Chirurgia		(1938)	1
Université de Lausanne Faculté de Médecine		(1930)	1

* License has not been issued.

South Carolina June Report

Dr. A. Earle Boozer, secretary, State Board of Medical Examiners of South Carolina, reports the oral and written examination for medical licensure held at Columbia, June 24-26, 1940. The examination covered seventeen subjects and included fifty-two questions. An average of 75 per cent was required to pass. Forty candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine		(1940)	81.9
Tulane University of Louisiana School of Medicine		(1940)	84.2
Johns Hopkins University School of Medicine		(1932)	81
University of Nebraska College of Medicine		(1939)	83.6
Columbia University College of Physicians and Surgeons		(1919)	89
Jefferson Medical College of Philadelphia		(1940)	79.7
University of Pennsylvania School of Medicine		(1929) (1939) 82.1	79.9,
Medical College of the State of South Carolina		(1940)	79,
	81.1, 81.5, 81.5, 82.7, 83, 83.2, 83.9, 84, 84, 84.1, 84.4, 84.5, 84.6, 84.6, 85.2, 85.4, 85.5, 85.6, 85.6, 85.7, 85.7, 85.9, 85.9, 86.2, 86.7, 86.7, 88.1, 89, 89.6, 89.7, 92		

Fifteen physicians were licensed to practice medicine by reciprocity and one physician so licensed by endorsement on May 1, June 25 and July 11. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1923), (1937)	Georgia
University of Georgia School of Medicine		(1936)	Georgia
Rush Medical College		(1937)	Alabama
University of Cincinnati College of Medicine		(1933)	Ohio
Western Reserve University School of Medicine		(1938)	Ohio
University of Oklahoma School of Medicine		(1937)	Oklahoma
Jefferson Medical College of Philadelphia		(1932), (1938) (1937)	N. Carolina, Pennsylvania
University of Tennessee College of Medicine		(1937)	Tennessee
Baylor University College of Medicine		(1919)	N. Carolina
Medical College of Virginia		(1930, 2)	N. Carolina
University of Virginia Department of Medicine		(1931)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Duke University School of Medicine		(1936)	N. B. M. Ex.

Book Notices

Modern Dermatology and Syphilology. By S. William Becker, M.D., Associate Professor of Dermatology and Syphilology, Kuppenheimer Foundation, University of Chicago, and Maximillian E. Obermayer, M.D., Assistant Professor of Dermatology and Syphilology, Kuppenheimer Foundation, University of Chicago. Cloth. Price, $12. Pp. 871, with 493 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1940.

Here is a distinctly new volume in the field of textbooks on dermatology. The book has been planned primarily as a textbook and contains several new features both as to arrangement and as to nature of material which will make it appeal to the medical student. The functional point of view has been dominant. Skin diseases are grouped according to common causation or diagnostic considerations which make natural grouping. There is a general consideration of therapy as has been the custom with other textbooks on diseases of the skin, but in addition special information is provided in relationship to each group of diseases. The bibliography for each chapter is brief but useful. There are thirty-two colored illustrations and a great number of illustrations in black and white, which naturally are of special value in a work on diseases of the skin. Another new feature is a chart of the treatment of syphilis worked out according to the technic of the University of Chicago Clinics but guided largely by the decisions of the Cooperative Group. A chart of this type is obviously useful as a guide to the general practitioner. The book is printed in two narrow columns, which make reading easy. The style is direct and the volume has been well edited. This book will constitute not only a textbook for students but also an exceedingly good reference book in its field. The section on syphilis concludes the volume and the section itself is concluded with a discussion of the social aspects of the disease and the public effort against it. This is, of course, unique for a textbook on diseases of the skin and syphilis. Progress in this field has been so rapid that this chapter is well nigh obsolete with its date of publication. A good index completes what is an exceptional volume.

Endocrine Therapy in General Practice. By Elmer L. Sevringhaus, M.D., F.A.C.P., Professor of Medicine, University of Wisconsin, Madison. Third edition. Cloth. Price, $2.75. Pp. 238, with 49 illustrations. Chicago: Year Book Publishers, Inc., 1940.

This edition includes a number of revisions throughout the various chapters and also a new chapter on the endocrine problems in childhood and adolescence. The book is intended to be an elementary textbook on endocrine therapy. It includes brief discussions of diagnosis and etiology of the various disturbances. The larger portion is devoted to the use of various agents in the treatment of endocrine disorders. The book is valuable in that it explains in a simple manner the many common endocrine disturbances and their treatment. It does not confuse the untrained reader with discussions on atypical and rare disorders but limits itself to cases which the general practitioner is most apt to meet. In this way a clear understanding of endocrine therapy is available for the general practitioner. The book is valuable in that it demonstrates that there is no need to consider endocrine therapy a mysterious, complicated and difficult task if the fundamental principles of physiology are adhered to. On the other hand, the author seems to evince undue optimism toward therapeutic procedures which are still in an experimental stage. The stimulation treatment of the ovaries with the various gonadotropins is still most uncertain, even in the hands of the specialist, and it appears inadvisable to recommend specific treatment to the untrained practitioner with these substances. Certainly the results with pregnant mare serum gonadotropin do not justify its use by the general practitioner. This is reflected in the statement on page 188 that preparations of pregnant mare serum gonadotropin "are probably effective stimulators of testicular tissue growth and function." In addition, the treatment of pituitary dwarfism does not appear to be as promising as the author maintains. In fact, it is surprising that the author considers it possible to overtreat with growth hormone and produce an acromegalic condition (p. 195) when, as a matter of fact, the growth hormone preparations available commercially are notoriously weak. Unfortunately the author refers repeatedly to proprietary endocrine preparations and the firms which market these products. This procedure aids in the promotion of certain products which may not have been examined and approved by official organizations on pharmaceuticals and, on the other hand, discriminates against other preparations which might be equally effective.

Pathology. By Eugene C. Piette, M.D., Pathologist and Director of the Clinical Laboratories of the West Suburban Hospital, Oak Park, Illinois. Third edition. Cloth. Price, $2. Pp. 247, with 60 illustrations. Philadelphia: F. A. Davis Company, 1940.

Although the title of this book gives no indication of its purpose, the introduction and text suggest that it is intended for nurses. In addition to a short review of the meaning of terms used in pathology there are also appended directions for collecting, labeling and examining specimens destined for a laboratory of clinical pathology. The appropriateness of writing a pathology for nurses might well be questioned. Possibly they should have their minds and their time fully occupied with their own specialty, without any dabbling in the jargon of the medical sciences. But if modern standards force them to learn the special language of pathologists, then, at least, instruction in this line should be accurate and down to date. This book falls short in both of these requirements. Beginning as a sort of amplified dictionary, it becomes a potpourri of pathologic descriptions, symptoms, treatment and admonitory advice. For example:

Page 20. "If there is a pathologist in the hospital, the nurse must call him immediately after the thyroid is removed."

Page 24. "Vitamin A—antiophthalmic and anti-infective . . ."

Page 39. "Arteriosclerosis is a disease of advanced age . . . In still another case the arteries of the pyloric part of the stomach or duodenum become thickened, hyalinized, and their lumen becomes obliterated while the patient is still in his thirties and shows no other signs of sclerosis. This may cause a peptic ulcer."

Page 42. "Only the stones (in gallbladder) which contain a certain amount of calcium cast a shadow on x-ray examination."

Page 54. "Peptic ulcer (gastric and duodenal), according to a modern conception, is also an infarct."

Page 56. "Frequently this death (from embolism) occurs after slight exertion, sitting up or turning over, against the doctor's orders."

Page 61. "In the temperate zone syphilis is the most important causative agent in local enlargements of an organ such as the leg, scrotum, etc."

Page 93. "This mouth breathing may lead to heart lesions, arthritis, and nephritis."

Page 99. " . . . Infected hemorrhoids, may lead to inflammation of the portal vein (pylephlebitis) . . ." "Peptic ulcer . . . is probably always an infarct."

Page 109. " . . . diseases of the skull bones (otitis) . . ."

Page 161. "The tumors composed of nerve tissue are rare."

Page 187. "Some patients prefer not to disclose their identity and the pseudonym of John Doe is most popular in these instances. It is probably advisable not to express any signs of having heard this name before."

Two further objections are to be added. One is the character of the illustrations. One of them, for instance, was taken from Billroth and most of the others might accompany a book written a hundred years ago but certainly are not worthy of modern publications. The other objection is the fact that an attempt has been made to instruct the nurses in regard to clinical pathologic procedures. Not only is the instruction inadequate, but in some instances it is not correct.

Problems of Nervous Anatomy. By J. Boeke, LL.D., Professor of Histology and Embryology, the University of Utrecht, Utrecht. Cloth. Price, $2.75. Pp. 164, with 48 illustrations. New York & London: Oxford University Press, 1940.

This little book contains the substance of three lectures delivered at the Universities of London and Oxford in 1937 and of a lecture delivered before the Anatomische Gesellschaft the same year. The book is divided into four chapters corresponding to these four lectures and dealing with (1) changes in the spinal and sympathetic innervation of the skin during degeneration and regeneration, (2) the sympathetic ground plexus in the glands, muscles and connective tissues of the body, (3) the problem of the "interstitial cells" in the sympathetic nervous system: their relation to neurons, and the innervation impulse as a humoral change in the tissues, and (4) the present state of the neuron doctrine and our knowledge of the synaptic junctions between the nerve cells themselves and between nerve cells and end organs. The second and third chapters contain a clear statement of the author's conception of the connections between the sympathetic nerve fibers and the innervated tissues, i. e. the glands, smooth muscles and, strangely enough, also connective

tissue. This connection consists of a continuous unbroken net of very "delicate interwoven and anastomosing nonmyelinated nerve fibers, running in strands or flattened bands of extremely delicate neurofibrillae with scattered nuclei, forming the terminations of the sympathetic plexuses" and including many "interstitial" cells. These interstitial cells, which many authors have regarded as connective tissue elements, are interpreted as nerve cells. Since the individual nerve fibers of the sympathetic nerves are thought to lose themselves in this diffuse network, the individual sympathetic neurons are diffusely connected at the periphery. Boeke accepts without question the conception of a humoral transmission of nerve impulses and he believes that the diffuse terminal net which he describes is especially adapted to this mode of transmission. The concluding chapter contains a not very illuminating argument against the validity of the neuron theory. The illustrations are excellent and present very well the conception of the terminal net. They are all interpretative drawings and as such lack the objectivity of photomicrographs. The book is a valuable contribution to a controversial subject but is to be taken as an expression of the author's personal convictions rather than as presenting a final solution of the problems discussed.

Textbook of Biochemistry. By Benjamin Harrow, Ph.D., Professor of Chemistry, City College, College of the City of New York. Second edition. Cloth. Price, $3.75. Pp. 439, with 88 illustrations. Philadelphia & London: W. B. Saunders Company, 1940.

One would expect that the new edition of Harrow's textbook should prove to be popular for a first course in biochemistry and for medical or dental students. Indeed, most medical practitioners will find it a valuable book for a succinct review of biochemistry. It is clearly and simply written, presupposes little knowledge of biochemistry on the part of the reader, and adequately presents the main outlines of the subject. The author first considers the chemistry of carbohydrates, fats, proteins, nucleoproteins and enzymes. He then discusses the subjects of foods and vitamins and of syntheses in the plant kingdom. This leads logically to a consideration of digestion and absorption by the animal body and the mechanism of metabolism and excretion of foodstuffs. Obviously, in a book intended to serve as a textbook it is impossible to cover in great detail the tremendous advances which have been made in biochemistry in the last two decades. Nevertheless Dr. Harrow has succeeded in incorporating wherever possible the most modern developments and interpretations. This is clearly illustrated in the chapters on vitamins and hormones. An excellent practice has been followed in the choice of references for the various chapters. Individual papers have been selected with a view to training the student in the experimental method of approach. The emphasis in the bibliography has been placed on critical, modern reviews. The book contains numerous well chosen illustrations and a five page appendix on the nutritive value of foods.

Chirurgie réparatrice et correctrice des téguments et des formes. Par L. Dufourmentel. Préface du Professeur Pierre Sebileau. Paper. Price, $3. Pp. 407, with 451 illustrations. Paris: Masson & Cie, 1939.

This work encompasses a thorough but unpadded review of the entire field of plastic surgery. All phases of reconstruction are discussed in an engaging manner. The author is well known in France as an authority on the subject. Deformities of the face, including the nose, lips, jaws and ear, are thoroughly discussed and effectively illustrated by photographs and line drawings. There are also chapters on harelip, cleft palate, and so on. The author gained a great deal of experience in this type of work under Morestin, Sebileau and others during and after the war of 1914-1918. The world conflict demanded competence in reparative surgery for facial injuries, and it seems that recent events hold up in bold relief the necessity of possessing knowledge for effective reconstruction work on the face. The book opens with a discussion of generalities. The author stresses prompt emergency esthetic surgery, pointing out that many bad results follow neglect of proper primary care of wounds. The operative procedures described are pretty well standardized; the author describes those which in his hands have proved most effective. He uses by preference cartilage instead of bone transplants in operations about the nose. The bibliography following each chapter is a valuable addition to the work, enabling the reader interested in any particular phase of the subject to familiarize himself with contemporary writings on the subject. All in all, the work is a well rounded out volume and can be recommended to all who are interested in the subject and who are conversant with the French language.

Elmer and Rose Physical Diagnosis. Revised by Harry Walker, M.D., F.A.C.P., Associate Professor of Medicine, Medical College of Virginia, Richmond, Va. Eighth edition. Cloth. Price, $8.75. Pp. 792, with 295 illustrations. St. Louis: C. V. Mosby Company, 1940.

This volume is a new edition of the popular book on physical diagnosis by Elmer and Rose reedited by Dr. Harry Walker. The author states in the introduction to this edition that the book is to be a guide to students of medicine and to general medical practitioners. The author is one who has had considerable experience in teaching and in the practice of medicine, and he therefore can speak from knowledge gained by his own personal efforts. The book covers the entire problem of the bedside approach to clinical medicine from the standpoint of physical diagnosis and, in addition, there is incorporated in it quite a comprehensive bit of information concerning special procedure. The impression is that the author has used keen discrimination in his effort to evaluate the importance of both physical methods and the so-called procedures of precision. The first section of the book is taken up with the art of physical diagnosis and the physical changes which result in a modification of normal physical phenomena. The second section deals with special diseases and their important physical signs. The section which deals with physical diagnosis in neuropsychiatric patients is a distinct disappointment. This was not written by the author, and hence he is not responsible for the careless construction and numerous loose statements. This chapter should certainly be rewritten in the next edition and a large mass of uncertain and doubtful data eliminated. As a whole, the book is a commendable one and should have the justifiable support of those who find a book of this type obligatory in clinical medicine.

Diseases of the Nervous System. By W. Russell Brain, M.A., D.M., F.R.C.P., Physician with Charge of Out-Patients to the London Hospital, London. Second edition. Cloth. Price, $9.25; 30s. Pp. 950, with 77 illustrations. New York & London: Oxford University Press, 1940.

A second edition of this useful compendium is welcome. Its compact lucid accounts of neurologic disorders are attractive and useful to students. The latest advances in neurologic knowledge have been included as far as they seem well established. In addition a useful new chapter has been added on the psychologic manifestations of organic nervous disease. In order to make room for this chapter without enlarging the book, the author has wisely omitted a discussion of endocrine disorders. Some new illustrations appear but, as in the first edition, seem to have been inserted haphazardly and add little to the book. The discussion of the neuroses might well have been omitted; not only is it too brief to be of any value but this subject is now adequately discussed in every psychiatric textbook. But only twenty-four pages of this book are occupied by the neuroses, so that this is not a serious defect. The discussions of neurophysiology and neuropathology are inadequate but, since these subjects are well presented in most American medical schools, this manual is quite satisfactory as a clinical guide.

Physiology and Anatomy. By Esther M. Greisheimer, B.S. in Education, M.A., M.D., Professor of Physiology, Woman's Medical College of Pennsylvania, Philadelphia. Fourth edition. Cloth. Price, $3.50. Pp. 822, with 474 illustrations. Philadelphia, Montreal & London: J. P. Lippincott Company, 1940.

This edition is thoroughly revised and reset to meet the most recent trends in teaching the subject. The subject matter has been arranged on the unit plan and consists of five units: the body as an integrated whole, the erect and moving body, integration and control of the body by the nervous system, maintaining the metabolism of the body and the reproductive system. The teacher's manual for use with the text is written by Miss Ostlie and prefaces each unit. The manual consists of thirty-six lectures and laboratory demonstrations which are most practical for the instruction of the student. In spite of the fact that the book is devoted to two subjects there is a definite text separation of them and the book can be used for separate courses in anatomy and physiology. The organization is excellent. The

written material is enhanced by helpful illustrations and each chapter is practically crystallized by summaries; some chapters contain a concise discussion of the application of the didactic material to clinical conditions. The material is presented in a terse and logical manner. It is explicit and graphic and is carefully edited. The illustrations are carefully selected and well done. The book is current and authoritative and is written in a lucid and engaging style. It should find popular acceptance among teachers of physical education and nurses. Its use is, however, not limited to these groups. Because of its simplicity in presentation it could profitably serve other groups of students who are interested in the study of human anatomy and physiology.

A Textbook of Physiology. By William H. Howell, Ph.D., M.D., ScD. Fourteenth edition. Cloth. Price, $7.50. Pp. 1,117, with 330 illustrations. Philadelphia & London: W. B. Saunders Company, 1940.

The author again has brought his book down to date. His guiding principles have been the importance of simplicity and clearness in presenting facts and theories, and the need of limitation of material that must be selected from a bewildering number of researches that have been published in physiology and the related sciences. Amid the conflicting results of this mass of literature, the best that an author can do is to give as clear a picture as possible of the tendencies of the time. There are numerous illustrations, a few of which are beautifully reproduced in color; and yet it seems that the book would be more valuable to students had there been a still larger number of carefully selected illustrations.

Atlas der Hals-, Nasen-, Ohrenkrankheiten: Eine Sammlung typischer Krankheitsbilder mit topographischen, diagnostischen und therapeutischen Hinweisen. Von Dr. Carl von Eicken, ord. Professor an der Universität Berlin, und Dr. A. Schulz van Treeck, Assistant der Universitäts-Hals, Nasen-, Ohrenklinik der Charité, Berlin. Cloth. Price, 32 marks. Pp. 199, with 461 illustrations. Leipzig: Georg Thieme, 1940.

This fine work cannot be too highly praised. It is a magnificent tribute to the otolaryngologic, not to mention the publisher's, art. The portion devoted to text is minimal. For the larger part this atlas depicts familiar conditions in the ear, nose and throat. Less commonly seen situations are by no means neglected, however. The larger number of reproductions of disease conditions are in color so masterfully executed that the pleasure derived in gazing at them almost equals the informative aspect. In the section devoted to otology alone the illustrations number over 125, and similarly those relating to the nose, larynx and pharynx are generously apportioned. Intended chiefly for students and general practitioners, this work is nevertheless of great value to the specialist. Besides the disease conditions so beautifully portrayed there are adequate sections relating to topographic anatomy and therapeutic interventions.

The Public Health Nurse and Her Patient. By Ruth Gilbert, Supervisor of Social Work, Psychiatric Service in the Community, New Haven. Cloth. Price, $2.25. Pp. 396. New York: Commonwealth Fund; London: Oxford University Press, 1940.

This book is of interest primarily to nurses engaged in public health nursing. It is a study of the nurse's mental attitude and the philosophy of her work as it involves her relationship with patients, other nurses and co-workers. Originally entitled "Mental Hygiene in Public Health Nursing," it deals with situations which confront the nurse in her work. It contains chapters on nurses' attitudes, patients' attitudes, physical defects and injuries, mental defects and disease, the building of relationships, the nurse and her group, the nurse and the maternity patient, the child in his family and nursing problems related thereto, and familiar training situations relating to the training of the infant. A chapter is devoted to interagency relationships. Except for casual references there is no adequate discussion of the relationship of the public health nurse to the practicing physician, although this constitutes one of the most important and frequently disastrous relationships, especially with inadequately trained nurses working under insufficient supervision. The term "physician" and its equivalent "doctor" do not appear in the index, nor are medical relationships indexed under that heading.

Except for this inadequacy, the book should be extremely useful to the public health nurse and not without value to the private duty nurse, since patients are patients regardless of the label which may be affixed to the nurse who is serving them. Unlike much professionally self-conscious literature, this book is not a bore but is distinctly readable. Like all publications of the Commonwealth Fund, it is beautifully printed and bound.

A Manual of Otology, Rhinology and Laryngology. By Howard Charles Ballenger, M.D., F.A.C.S., Assistant Professor of Otolaryngology, Northwestern University School of Medicine, Chicago. Cloth. Price, $3.75. Pp. 302, with 94 illustrations. Philadelphia: Lea & Febiger, 1940.

The author has endeavored to produce a textbook chiefly for the use of undergraduate students. Such a work needs to be made concise, and in the effort to be brief arise all the possibilities for errors in judgment as to what to and what not to retain. The ideal textbook for students would abound in numerous illustrations of anatomic, histologic and pathologic importance. Their number would of necessity reduce their size and so for clarity's sake they ought to be in large part semidiagrammatic. Most of the illustrations have a familiar appearance. They appear to come from the author's larger and much older work, and it is a pity that an entirely new set was not prepared. In most other respects the author has done well. His clinical judgment is distinguished by good sense, he is not an enthusiast for indiscriminate surgical intervention and he is familiar with important recent advances in the physiology of his field.

Standardized Tests and Educational Practice. By Elisha F. Bliss Jr. Paper. Price, 75 cents. Pp. 29. Brooklyn, N. Y.: The Author, 1940.

This pamphlet seems to express a deep-seated and intense, but rather vague, resentment and dissatisfaction with the existing methods by which intelligence, aptitude and other psychologic tests are employed in the schools. An ordinance is proposed by means of which the purchase, preparation, administration and interpretation of such tests could supposedly be regulated, although the pamphlet also condemns what it calls political regulation while recommending an ordinance to be adopted by local political bodies, plus federal regulation. The text of the ordinance and the involved cumbersome style in which the pamphlet is written make it extremely difficult to interpret. There is, in fact, no assurance that the central idea, if any, contained in this pamphlet is not so deeply buried in words that it is not totally incomprehensible.

Insurance of the Expense of Medical Service. By Wendell A. Milliman. [Reprinted from the Transactions of the Actuarial Society of America, Vol. XLI, Part I, No. 103, May 1940]. Paper. Pp. 114-149. New York, 1940.

This pamphlet is almost the only attempt to apply actuarial calculations to the problem of insurance of the expense of medical service. The peculiar effect on actuarial calculations of the relations between medical service needed and medical service sought under the influence of insurance is noted, as is also the analogous difficulty of exercising professional control over the amount and quality of service given. Practically all the worthwhile studies of costs of medical care and income of physicians are utilized and several insurance schemes are discussed. Elements in medical service which are insurable are analyzed and some of the methods of control of the more hazardous elements are discussed.

Le syndrome de désintégration phonétique dans l'aphasie. Par Th. Alajouanine, professeur agrégé à la Faculté de médecine de Paris, André Ombredane, directeur-adjoint du laboratoire de psycho-biologie de l'enfant à l'École pratique des hautes-études, et Marguerite Durand, assistante à l'Institut de phonétique. Paper. Price, 80 cents. Pp. 138, with 44 illustrations. Paris: Masson & Cie, 1939.

The authors have made a careful study of the disturbances of speech in the aphasic. For their phonetic studies they have used graphic registration of the sound waves and describe in detail the variations from normal. This is an interesting study of the peripheral manifestations of a central speech disorder.

Allergy. By Leo H. Criep, M.D., Consultant, Veterans' Administration, Pittsburgh. In collaboration with the Division of Post Graduate Instruction and Medical Research, Medical and Hospital Service, Veterans' Administration. Veterans' Administration Medical and Hospital Service, Clinical Bulletin No. 29. Paper. Price, 10 cents. Pp. 60. Washington, D. C.: Supt. of Doc., Government Printing Office, 1940.

This is a brief discussion of the present status of knowledge of anaphylaxis and allergy in man. As an introduction to the subject it should be useful. Its scope is rather limited.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Compensability of Death from Lobar Pneumonia.—The workmen's compensation act of North Dakota provides: "The term 'injury' includes in addition to any injury by accident, any disease proximately caused by the employment." Tweten, an employee of Wells County, N. D., contracted lobar pneumonia following a soaking received while performing outside work on the fair grounds during cold and rainy weather. He died as the result of the pneumonia. His wife, the claimant, filed a claim for compensation under the workmen's compensation act of North Dakota. Her claim was rejected by the North Dakota workmen's compensation bureau. This ruling was reversed by the district court, Wells County, N. D., and judgment was rendered for the claimant. On appeal to the Supreme Court of North Dakota the judgment for the claimant was affirmed and the workmen's compensation bureau petitioned that court for a rehearing.

The medical testimony, said the Supreme Court, was in accord that exposure to cold and inclement weather frequently is a contributing cause of pneumonia. In the judgment of the court there was no question but that the deceased died from lobar pneumonia contracted as a result of exposure to inclement weather in the course of his employment. The court could not agree with the workmen's compensation bureau's contention that the disease from which Tweten died was not a compensable "injury" within the meaning of the workmen's compensation act of North Dakota. The court pointed out that a Texas case, *Amann* v. *Republic Underwriters,* 100 S. W. (2d) 778, on which the bureau relied and which denied compensation under circumstances similar to those in the instant case, was decided under the Texas workmen's compensation act, which differs from the North Dakota act and defines a compensable injury to be "damage or harm to the physical structure of the body and such diseases or infection as naturally result therefrom." The language in the Texas act makes compensable only such diseases as are caused by a prior physical injury rather than by a particular employment. Under the North Dakota act, however, even prior to the enactment of the 1925 amendment quoted above, a physical impact was not a necessary prerequisite to a compensable "injury." In the opinion of the court the 1925 amendment merely enlarged the meaning of the term "injury" and included within its meaning any disease proximately caused by the employment. The court concluded, therefore, that to be compensable a disease need not arise from, or be directly traceable to, some physical impact or hurt, and so it held that Tweten's death from pneumonia was compensable. Accordingly, the petition for a rehearing was denied and the judgment for the claimant was upheld.—*Tweten v. North Dakota Workmen's Compensation Bureau (N. D.), 287 N. W. 304.*

Medical Practice Acts: Right of Physician and Corporate Employer to Enjoin Board of Examiners from Revoking Physician's License.—Fisch, a physician licensed to practice in Minnesota, agreed with an incorporated social and fraternal organization to render medical services to members of the organization and to their families. Apparently, Fisch was paid directly by the organization, but whether on a monthly salary or on a fee basis the reported decision does not state. Without the payment of additional charges other than their membership fees in the organization, members of the organization and their families were entitled to medical services from Fisch. Fisch and the fraternal organization sought to enjoin the board of medical examiners of Minnesota from instituting proceedings to revoke Fisch's license to practice in Minnesota, based on the theory that Fisch was guilty of unprofessional conduct because of his connection with the corporation. The plaintiffs alleged that the threatened action of the board would be an interference with the contractual relationship existing between them. The trial court dismissed the action and the plaintiffs appealed to the Supreme Court of Minnesota.

It is apparent, said the Supreme Court, that what the plaintiffs really seek by this action is a judicial determination that the contract between them is a valid one; in other words, what they actually seek is the equivalent of a declaratory judgment. Since the board of medical examiners is a body organized and existing by virtue of legislative enactment, courts must exercise extreme caution in passing on its actions, especially if what the board proposes to do and what the plaintiffs want enjoined lies within the jurisdictional authority of the board. Unquestionably, the Minnesota medical practice act authorizes the board to "suspend or revoke the license of, any person guilty of immoral, dishonorable, or unprofessional conduct, but subject to the right of the applicant or licentiate to appeal to the district court in the proper county on the questions of law and fact." (3 Mason Minn. St. 1940 Supp., Sec. 5707.) As to what constitutes "immoral, dishonorable, or unprofessional conduct" the statute affords adequate definitions. As to Fisch, the sole question is whether or not he has an adequate remedy at law under the section just referred to. If he has, then courts have no right to interfere except as provided by the law presented, i. e., to review on appeal "the questions of law and fact." The board has jurisdiction to proceed against any member of the medical profession, and adequate means are afforded on hearings held by the board for the accused physician to make any showing material to the issues made on any charge brought against him. Review from the board's decision is provided, hence the legal remedy is there and obviously is ample. As to the physician, therefore, in the judgment of the court the trial court clearly was right in dismissing the suit.

As to the corporate plaintiff, the fraternal organization, continued the court, it is apparent that its sole desire is to enjoin the board from proceeding against its physician employee. It has no license or right of its own of or concerning which the board has any jurisdiction. It cannot "interfere" with any proceedings that may be brought by the board against the physician employee. By joining their forces the plaintiffs cannot add one whit to their alleged cause. If that could be done, the board in practically every case would be handicapped and perhaps prevented from proceeding against any practitioner, since even a quack would be likely to get some one to join him in an injunction suit.

The Supreme Court accordingly confirmed the order of the trial court dismissing the suit.—*Fisch v. Sivertsen et al., Comprising State Board of Medical Examiners (Minn.), 292 N. W. 758.*

Society Proceedings

COMING MEETINGS

American Association for the Study of Neoplastic Diseases, Baltimore, Dec. 19-21. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.

American Society of Anesthetists, New York, Dec. 12. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.

American Student Health Association, Ann Arbor, Mich., Dec. 27-28. Dr. Ralph I. Canuteson, University of Kansas, Lawrence, Kan., Secretary.

Annual Congress on Industrial Health, Chicago, Jan. 13-15. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago, Secretary.

Eastern Section, American Laryngological, Rhinological and Otological Society, Philadelphia, Jan. 10. Dr. N. S. Weinberger, Robert Packer Hospital, Sayre, Pa., Chairman.

Puerto Rico, Medical Association of, San Juan, Dec. 13-15. Dr. David E. Garcia, P. O. Box 3866, Santurce, Secretary.

Radiological Society of North America, Cleveland, Dec. 2-6. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.

Society of American Bacteriologists, St. Louis, Dec. 27-29. Dr. I. L. Baldwin, Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.

Southern Section, American Laryngological, Rhinological and Otological Society, Nashville, Tenn., Jan. 8. Dr. William G. Kennon, Doctors Bldg., Nashville, Tenn., Chairman.

Southern Surgical Association, Hot Springs, Va., Dec. 10-12. Dr. E. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

Western Surgical Association, Topeka, Kan., Dec. 6-7. Dr. Albert H. Montgomery, 122 South Michigan Blvd., Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

10:125-156 (Oct.) 1940

Chancroid, Granuloma Inguinale and Lymphogranuloma Venereum: Laboratory Aids and Problems in Diagnosis. E. S. Sanderson, Augusta, Ga.—p. 125.
Acute Cholecystitis and Biliary Disease: Immediate and Delayed Treatment: Report of Sixty-Two Cases. D. C. Donald, Birmingham.—p. 129.
Vomiting: Its Symptomatology. J. M. Bell, Mobile.—p. 135.
Pneumonia: Emphasis on Newer Forms of Treatment. R. O. Russell, Birmingham.—p. 138.

American J. Digestive Diseases, Huntington, Ind.

7:401-446 (Oct.) 1940

Factors in Diagnosis of Intestinal Protozoa in Man and in the Interpretation of the Findings. J. L. Borland, Jacksonville, Fla.—p. 401.
*Acute Ulcerative Esophagitis. L. Bloch, Chicago.—p. 407.
Gastrointestinal Manifestations of Shock. P. Klemperer, A. Penner and Alice Ida Bernheim, New York.—p. 410.
Occurrence of Gastritis as Diagnosed by Gastroscopy in Gastric Neuroses. J. M. Ruffin and I. W. Brown Jr., with technical assistance of E. H. Clark, Durham, N. C.—p. 414.
Effect of Inflation of Stomach on Gastroscopic Picture. J. M. Ruffin and I. W. Brown Jr., with technical assistance of E. H. Clark, Durham, N. C.—p. 418.
Gastritis Simulating Peptic Ulcer. A. B. Rivers and L. A. Smith, Rochester, Minn.—p. 424.
Spontaneous Variations in Gastric Secretion in Response to Histamine Stimulation. W. L. Palmer, J. B. Kirsner and P. B. Nutter, Chicago.—p. 427.
Comparative p_H Values Within the Stomach, Pylorus and Duodenum in Antacid Therapy. J. B. Eyerly, Chicago.—p. 431.
Correlation of Antral and Bulbar Pressures with Fluoroscopic Observations During Gastric Evacuation. J. P. Quigley, J. M. Werle and D. Brody, Cleveland.—p. 434.
*Secretin Test in Diagnosis of Pancreatic Diseases: Report of 130 Tests. J. S. Diamond and S. A. Siegel, introduction by J. L. Kantor, New York.—p. 435.
Presence of Spirochetes in Human Gastric Mucosa. A. S. Freedberg and L. E. Barron, Boston.—p. 443.

Acute Ulcerative Esophagitis.—Bloch discusses twenty-six cases of acute ulcerative esophagitis found at necropsy. Twenty of the cases were in adults and six in infants. In infants the condition may be due to thrush or to a complication of a congenital lesion, such as esophageal narrowing. The ages of the adults were between the third and the eighth decades; six of the patients were in the seventies. Six were men and fourteen women. Fourteen had been operated on, ten for disorders of the gastrointestinal tract. Of the non-surgical patients two died of acute coronary occlusion, one of congestive heart failure and hypertension, one of granulocytopenia with acute tracheobronchitis, one of carcinoma of the pancreas with duodenal invasion and one of subphrenic abscess and gastric ulcer complicating prostatic disease. The frequent association of peptic ulcer with acute ulcerative esophagitis has been observed by other workers. Little is known about the etiology of acute esophagitis. Butt and Vinson believe that the trauma produced by an indwelling Levin tube for decompressing the abdomen or irritation from vomiting are important causes. Intubation was done in eleven of seventeen cases of the present series in which operation was performed. Seven vomited and five, after intubation, vomited. It is not unreasonable to accept vomiting and intubation as a causative factor in the production of acute esophagitis. However, vomiting is extremely common postoperatively but acute esophagitis is comparatively rare. Penner and Bernheim believe that the same cause, the mechanism of shock, is responsible for the production of postoperative acute esophagitis, gastritis, duodenitis and colitis. In the present series at least eleven patients who were operated on suffered from what might well be considered shock. One of the patients, following a gastric resection, showed not only acute esophagitis but acute membranous gastritis, duodenitis and colitis. Again many patients died of shock, but acute esophagitis did not develop in them. Other etiologic factors undoubtedly play a part. Embolism and thrombosis are favored by the presence of large venous channels in the lower end of the esophagus. The nervous system also must be considered. One of Bloch's patients had syphilitic meningo-encephalitis, another acromegaly and a third acute fulminating encephalitis. In contrast to chronic esophagitis there seems to be no way of diagnosing the acute type. Vomiting or regurgitation of blood stained fluid or the obtaining of such fluid through a tube should arouse the suspicion of its presence. Here the question arises whether vomiting is a symptom of or the cause of the esophagitis. Unfortunately, when acute esophagitis is present the underlying and primary condition is extremely serious. There is no special form of therapy for this type of case.

Secretin Test for Pancreatic Diseases.—Diamond and Siegel performed 130 secretin tests on 104 individuals; twenty-four were normal subjects and included physicians, students and others with unrelated ailments, and eighty were patients having such conditions as cholelithiasis, pancreatitis, obstructive jaundice, pancreatic cysts, steatorrhea, diabetes, hepatic cirrhosis with syphilis and ulcerative colitis. The test supplied the authors with valuable information of disturbed function of the gland in chronic states that had been unrecognized and unsuspected. In cholelithiasis with common duct stones the pancreas became simultaneously affected, revealing various degrees of disturbed function. In obstructive lesions when the pancreatic duct is encroached on from growths in the proximity of the duct the test supplied diagnostic data through a diminished or totally absent response, depending on the extent of blockage of the duct. In syphilis the test seemed to show a depressed function of the pancreas. This likewise occurred in cirrhosis of the liver, chronic alcoholism, acute yellow atrophy of the liver and the graver forms of toxic hepatitis. In the steatorrheas the test was most valuable in indicating the presence of pancreatic deficiencies and helped to differentiate between the idiopathic group including sprue and those with pancreatic lesions. In follow-up studies of the steatorrhea group the test showed the reversibility of the function and was consistent with the clinical improvement of the patient, indicating the degree of recovery.

American J. Obstetrics and Gynecology, St. Louis

40:545-726 (Oct.) 1940. **Partial Index**

Development of Implantation Theory for Origin of Peritoneal Endometriosis. J. A. Sampson, Albany, N. Y.—p. 549.
More Recent Conceptions of Pelvic Architecture. W. E. Caldwell, H. C. Moloy and D. A. D'Esopo, New York.—p. 558.
Changing Conceptions of Ovarian Tumors. H. C. Taylor Jr., New York.—p. 566.
Certain Outstanding Trends in Gynecology During the Past Forty Years. R. T. Frank, New York.—p. 574.
Evaluation of Treatment of Uterine Cancer. W. P. Healy, New York.—p. 578.
*Puerperal Infection. B. P. Watson, New York.—p. 584.
Twenty Years of Progress in Endocrine Studies of Reproduction. C. F. Fluhmann, San Francisco.—p. 609.
Development of Maternal Welfare Activities. F. L. Adair, Chicago.—p. 633.
Vulval and Vaginal Mycosis and Trichomoniasis. H. C. Hesseltine, Chicago.—p. 641.
Increase in Hospital Deliveries. E. D. Plass, Iowa City.—p. 659.
*Evaluation of Androgenic Therapy in Gynecologic Practice. J. W. Huffman, Chicago.—p. 675.
Clinical Experiences with Equine Gonadotropic Hormone. H. W. Erving, Christine Sears and J. Rock, Brookline, Mass.—p. 695.
Laboratory and Clinical Experience with Oral Pregneninolone. M. R. Cohen and I. F. Stein, Chicago.—p. 713.

Puerperal Infection.—Watson summarizes the advances in knowledge gained about puerperal infection in the last twenty years as follows: 1. Recognition of the part played by the anaerobes in puerperal and postabortal infection. 2. Proof that these anaerobic infections are endogenous in origin. 3. Proof that shock, hemorrhage, prolonged labor and traumatization of tissue predisposes to such infections. 4. Realization that the removal of dead and decomposing material resulting from this type of infection can, in most instances, be effected with no

risk, and usually with great benefit to the patient. 5. Identification of the different groups of the beta hemolytic streptococcus and proof that only group A is virulent in the human subject. 6. Establishment of the fact that infection with this organism is practically always exogenous. 7. Proof that these organisms are usually conveyed to the patient by a carrier who harbors them in the mouth, nose or throat. 8. Demonstration of the fact that the risk of infecting patients is practically nil by periodic nose and throat culture of all the members of the obstetric staff and of carriers, and complete masking of the nose and mouth of those attending the parturient and puerperal woman. 9. Demonstration of the persistence for long periods of the organisms in the environment of an infected individual even after she is removed from it. 10. A recognition of the necessity for complete isolation of all such infected women. 11. The discovery of the beneficial effects of sulfanilamide and its derivatives in streptococcic, gonococcic and Bacillus coli infections.

Androgenic Therapy in Gynecologic Practice.—Huffman reviews the experimental work and the clinical results obtained with androgen therapy in gynecology and states that the effects among twenty-two women who received androgenic therapy parallel those produced in laboratory animals by injections of testosterone propionate. Functional uterine bleeding was inhibited by the preparation. No notable masculinizing changes developed, except occasional temporary hypertrophy of the clitoris. Three patients have been under observation for more than two years. Testosterone propionate caused genital activity to cease in human beings as it has in the adult female rabbits and rats. This effect is the result of pituitary rather than ovarian inactivation. The changes produced are temporary, and the cyclic phenomena of the genitalia are resumed after administration of the drug is continued. When from 350 to 500 mg. of testosterone propionate is injected over a considerable period of time, temporary masculinizing changes, especially hypertrophy of the clitoris, may appear. Inhibition of lactation after testosterone propionate therapy has been observed clinically and microscopically in animals. According to the literature, reproduction is possible and normal children have been born to women who have been treated with the preparation prior to their pregnancies. There is considerable evidence to suggest that androgenic therapy has a place in the treatment of functional uterine bleeding, mastalgias, puerperal breast engorgement and inhibition of lactation. Further investigation of its use in dysmenorrhea and menstrual molimina is indicated. The use of the preparation may perhaps be advantageous in preference to the estrogens in certain menopausal disturbances.

American Journal of Psychiatry, New York

97:255-512 (Sept.) 1940

Naval Psychiatric Problems. D. G. Sutton, Washington, D. C.—p. 255.
Chronic Rheumatic Brain Disease as Possible Factor in Causation of Some Cases of Dementia Praecox. W. L. Bruetsch, Indianapolis.—p. 276.
Treatment of General Paresis with Malaria Induced by Injecting a Standard Small Number of Parasites. P. Hoch, E. Kusch and L. T. Coggeshall, New York.—p. 297.
Respiratory Plateaux in "Day Dreaming" and in Schizophrenia. W. Corwin, Waltham, Mass., and H. Barry, Tufts College, Mass.—p. 308.
Attempt to Delineate by Orderly Procedure Clinical Findings in So-Called Dementia Praecox (Schizophrenia). B. Cohen, North Grafton, Mass., and B. H. Flower, Boston.—p. 319.
Prognostic Criteria in Hebephrenia: Importance of Age, Sex, Constitution and Marital Status. B. S. Gottlieb, New York.—p. 332.
Differential Diagnosis of Schizophrenia in Light of Concept of Personality Stratification. O. Kant, Worcester, Mass.—p. 342.
Improvement in Convulsive Therapy with Metrazol by Premedication with Scopolamine Hydrobromide. J. V. Edlin and E. S. Klein, Chicago.—p. 358.
Study of Central Action of Metrazol. B. Libet, J. F. Fazekas and H. E. Himwich, Albany, N. Y.—p. 366.
Paroxysmal Auricular Fibrillation Complicating Metrazol Shock Therapy. M. H. Hoffmann, N. Sandler and H. Hecht, Eloise, Mich.—p. 372.
Insulin Shock Treatment: Death Due to Pulmonary Gangrene. W. Furst, Norristown, Pa.—p. 380.
Effect of Alcohol on Cerebral Metabolism. W. Goldfarb, K. M. Bowman and J. Wortis, New York.—p. 384.
Psychometric Performance of Children Receiving Amphetamine (Benzedrine) Sulfate. C. Bradley and Emily Green, East Providence, R. I.—p. 388.
Child Psychiatry at Maudsley Hospital. E. Mildred Creak, London, England.—p. 395.

American Journal of Public Health, New York

30:1159-1268 (Oct.) 1940

The Problem of Back Flow Preventive Measures Employed at the New York World's Fair. R. J. Gleason, New York.—p. 1159.
Responsibility of Organized Medicine in Medical Care. K. Emerson, New York.—p. 1171.
Typing of Typhoid Bacilli in Western States by Means of Bacteriophage. A. S. Lazarus, Denver.—p. 1177.
Rapid Methods for Estimation of Air Dustiness. H. H. Schrenk, Pittsburgh.—p. 1183.
Rapid Methods for Determination of Gases in Air. F. A. Patty, New York.—p. 1191.
The Problem of Malaria Mortality. H. W. Brown, Chapel Hill, N. C.—p. 1199.
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*Treatment of Suppurative Generalized Peritonitis with Alcohol. R. J. Behan, A. B. Sigmann, W. Ruehl and J. A. Zewe, Pittsburgh.—p. 92.

Peripheral Arterial Embolism.—Koucky and his associates attempted to evaluate therapeutic measures in twenty-five cases of peripheral arterial embolism treated at the Cook County Hospital from 1928 to 1938. This probably does not represent all the cases, as many may have been filed under other diagnoses, remained unrecognized or cured spontaneously through the establishment of collateral circulation. Most cases of peripheral arterial embolism occur in late adult life. Two of the twenty-five patients were less than 10 years of age and two were between 70 and 80 years. As is usually observed, mitral heart disease, on the basis of subacute bacterial or chronic rheumatic carditis, was the direct etiologic agent. The lower extremities were more frequently involved than the upper. In the present series the ratio was 5:20. The treatment of arterial embolism is divided into four types: nonoperative, arteriotomy, arterectomy and amputation. An embolism to the upper extremity can usually be treated conservatively because the collateral circulation will furnish sufficient blood to the limb. Embolism of any large vessel in the lower extremity down to and including the popliteal arteries is a surgical emergency and should be treated as such without any hopeful procrastination. The time factor in the performance of an embolectomy is of great importance and one should not wait once the site of the embolus is reasonably certain. With procrastination, reformation of a thrombus at the site at which the embolus has impinged becomes an added risk to embolectomy. If a free flow of blood after the embolus is removed is impossible, it is best to remove a segment of the artery (arterectomy), thus removing the irritable focus of the vasospastic reflex and facilitating collateral circulation. From a review of the cases the authors have learned that the usual case follows a more or less typical course toward a fatal termination and that this course can be altered. The patient is brought to the hospital in poor general condition, conservative methods are employed, and he seems to rally and appears in a much better condition. Meanwhile the extremity becomes gangrenous. As

the patient improves he is kept on this conservative management for days or even weeks, appearing constantly to improve. Then there is a general increase in the toxemia. The fever rises, the pulse accelerates and a moderate leukocytosis gives evidence of toxemia. As this increases, the emergency guillotine amputation is performed. This is followed by shock, infection and death. The authors found that in cases in which amputation was done as soon as improvement was apparent the results were better. These amputations were far better borne and could be carried out as planned, elective procedures. The average duration of life of three patients following embolectomy was thirty-nine hours, of four of the six following amputation forty-seven days, and of fourteen of the sixteen given conservative treatment twenty days, a respective mortality rate of 100, 66 and 88 per cent.

Alcohol for Suppurative Generalized Peritonitis.—Behan and his co-workers have used since 1930 in all cases of peritonitis at operation intraperitoneal lavage with 70 per cent ethyl alcohol as a routine. If free fibrinous fluid or pus was found in the peritoneal cavity, a culture was taken and this was immediately followed by the introduction of from 100 to 200 cc. or more of 70 per cent ethyl alcohol into the abdominal cavity. The amount may be increased so that the walled off and localized abscess cavity is filled or, if a generalized peritonitis is present, so that the free peritoneal cavity is flooded. In generalized suppurative peritonitis the abdominal wall is elevated by retractors on either side of the incision and sufficient alcohol is introduced to fill the peritoneal cavity so that the fluid level is even with the margin of the incision. The alcohol remains in situ for a few minutes and is then siphoned off by suction. The usual complications of suppurative peritonitis (gastromesenteric ileus, paralytic ileus, tympany, persistent vomiting and hiccupping) seldom occurred when this therapy was used. The authors believe the beneficial effect of alcohol due to its bactericidal action, reduction of bacterial activity, increase of resistance of all the tissues during this period, decreased absorption of toxins and poisonous tissue products during the period of reduced bacterial activity, induced hyperemia in the surface layers of the peritoneum and the beneficial systemic effect of the counter action of toxic products (because of inhibited absorption) in the circulation. The absorbed alcohol may act as a mild blood antiseptic and be a source of energy for the destruction of foreign proteins and other toxic substances, and it may also be of nutrient value because of its high caloric content. Forty-three cases of localized and forty-nine cases of generalized suppurative peritonitis were studied. Forty-six cases were treated by the alcoholic lavage of the abdominal cavity and the rest by wide incision and removal, if possible, of the diseased appendix. The majority of cases of acute suppurative appendicitis, localized appendical abscess and generalized suppurative peritonitis occurred in patients between 10 and 30 years of age. The average time of operation was about 4.23 days after the onset of the acute symptoms. The average period of delay before operation in cases in which alcohol lavage was used was 4.77 days and in the others 3.69 days. Patients treated with intra-abdominal alcohol lavage recovered more quickly than did those for whom alcohol was not used. In the alcohol treated group the temperature dropped to normal on an average, 9.1 days after operation, with the shortest period three days and the longest forty days (the latter case was complicated by postoperative intestinal obstruction). The average in the cases not treated with alcohol was 12.48 days. The shortest time in which the temperature returned to normal in this series was three days, the longest fifty-nine days. The pulse rate rose postoperatively to an average of 112 in the alcohol treated cases and to 127 in the other series. This may indicate that patients treated with alcohol did not remain so toxic. The average hospital time of the patients treated with alcohol was 22.04 days as compared to 27.59 days for those not so treated. The death rate in the series of generalized peritonitis treated with alcohol was 8.69 as compared to 45.39 per cent in the cases not treated with alcohol. The deaths were due to complications. There were no deaths among the cases of localized peritonitis. The prognosis was much better when culture of the intra-abdominal exudate showed a pure strain of organism than when it presented more than one organism.

American Review of Tuberculosis, New York

42:431-550 (Oct.) 1940

*Artificial Pneumothorax: Résumé of Twenty Years' Experience. F. L. Jennings, Indianapolis; P. M. Mattill and Frances C. Nemec, Oak Terrace, Minn.—p. 431.
Leukocytic Counts in Tuberculosis: Comparative Study of Several Methods of Interpretation. E. M. Medlar, A. J. Lotka and M. Spiegelman, New York.—p. 444.
*Instability of Tuberculin Reaction: Observations on Dispensary Patients, with Special Reference to Existence of Demonstrable Tuberculous Lesions and Degree of Exposure to Tubercle Bacilli. A. W. Dahlstrom, Philadelphia.—p. 471.
Control of Tuberculosis: Factors Suggested by Statistics of Sanatorium Patients. J. G. Bohorfoush and Pauline E. Michael, Madison, Wis.—p. 488.
Tuberculosis in Rabbits: Further Comparison of Roentgenologic and Pathologic Findings in Primary and Reinfection Experimental Pulmonary Tuberculosis in Rabbits: II. Reinfection Tuberculosis. H. E. Burke, New York.—p. 499.

Twenty Years' Experience with Artificial Pneumothorax.—For Jennings and his associates artificial pneumothorax has been for the last twenty years, and still is, the first choice among the various procedures used to collapse the lung. The method has the following advantages: 1. When satisfactory, pneumothorax collapses the diseased areas better than other methods. 2. It prevents the formation of pleural adhesions. 3. It can be augmented by other measures. 4. It may be discontinued with relative ease. It can never be predicted whether or not pneumothorax can be satisfactorily induced; only a trial will ascertain this. The authors think that, if such a trial does not establish collapse, other procedures should be used. They review the records of all patients for whom pneumothorax was considered suitable and who were discharged from Glen Lake Sanatorium prior to January 1937. There were 1,027 patients for whom unilateral pneumothorax was done or considered suitable. Among these there were 249 (24.2 per cent) who could not be given injections of air. Only a portion of the pleural space of 346 patients was found free from adhesions and the amount of pulmonary collapse was not sufficient to affect either the symptoms or the lesions. There were 111 patients who received some benefit from the air introduced into the pleural space. Either their symptoms were decreased or their lesions were partly controlled. There were 321 patients whose condition was classed as satisfactory because both their symptoms and their lesions were completely controlled by pneumothorax. Thus satisfactory collapse was obtained for only one out of every three patients. Follow-up examinations from one to twenty years revealed that patients who had the most satisfactory collapse and who had the greatest amount of free pleural space were in the best condition. Of patients not benefited by pneumothorax and subjected to further collapse, one out of four was dead three years from the time the pneumothorax was originally induced. Of those who had no other collapse procedures three out of four were dead. Further collapse constituted phrenic nerve surgery for 160 patients and thoracoplasty for fifty-four, while 125 had both phrenic nerve exeresis and thoracoplasty and seven patients had a combination of various procedures. These two groups of patients were treated over the same period of time in the same institution. Among 432 patients benefited by pneumothorax there were forty-eight who had phrenic nerve exeresis and ten who had intrapleural pneumonolysis. Thirty patients had phrenic nerve exeresis and thoracoplasty. Sixteen patients had a combination of various types of surgical collapse. Twenty-seven had thoracoplasty alone. Bilateral pneumothorax was induced or attempted 144 times. Seventy-six, or 52.8 per cent, of the patients are living and sixty-eight, or 47.2 per cent, are dead. Fifty of the sixty-eight deaths occurred within the first three year period. Bilateral pneumothorax is indicated for patients with active bilateral tuberculosis, for patients who develop tuberculosis in the contralateral lung during unilateral pneumothorax treatment and for patients whose tuberculosis becomes activated in the contralateral lung. A considerable number of the patients with bilateral pneumothorax underwent further surgery. The authors conclude that pneumothorax offers the best method of collapse when tuberculous lesions can be satisfactorily controlled by it. It shortens the period of bed rest.

Instability of Tuberculin Reaction. — Until recently an impression prevailed that, once established, the tuberculin reaction remained positive indefinitely. Dahlstrom points out that frequent discovery of calcified nodules, presumably of tuberculous origin, in patients not reacting to tuberculin has recently raised the question whether tuberculin allergy may not disappear after complete healing of the lesion and whether the allergy demonstrable in many cases of calcified lesions may not be dependent on chance reinfection rather than on the persistence of the original allergy. The question arises whether the tuberculin reaction, once established, remains positive during the activity of the lesion responsible for the initiation of allergy, in other words whether the tuberculin reaction is always positive in the presence of active tuberculous lesions. This study was undertaken to answer these questions and, in the event that the tuberculin reaction proved to be unstable, to determine the conditions under which allergy was maintained or lost. The dispensary records of 3,919 members of 513 families under observation from five to fifteen years were examined. Of these 2,490 were positive to tuberculin on at least one examination and 276, or 11.1 per cent, passed from the positive to the negative state during the period of observation. The lower the original degree of sensitiveness the greater was the likelihood of reversal from positive to negative. Only 0.4 per cent of 1,090 people giving a 3 plus reaction to the standard first dose of tuberculin became tuberculin negative, whereas the negative state supervened in 70 per cent of 185 persons giving a 1 plus reaction to the second dose. The greater the degree of family exposure the more likely was the reaction to remain positive. In families with no history of tuberculosis in any member 24 per cent of the members became negative, whereas among sixty-three reactors in families in which a patient with positive sputum resided constantly only one person (1.6 per cent) became negative. The tuberculin reaction never became negative in the group under consideration in the presence of lesions of active reinfection type tuberculosis but became negative in a small number of cases of tuberculous lesions of the type diagnosed only by x-ray examination. Reactive capacity disappeared in 0.72 per cent of the total number of patients with recognizable tuberculous lesions. The overwhelming majority of the unstable reactors were children. Reversion to negative reaction proved rare in adult life.

Annals of Surgery, Philadelphia

112:481-800 (Oct.) 1940. **Partial Index**

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*Studies in Blood Preservation: Stability of Plasma Proteins. J. Scudder, New York.—p. 502.
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*Plasma Loss in Severe Dehydration, Shock and Other Conditions as Affected by Therapy. A. S. Minot and A. Blalock, Nashville, Tenn.—p. 557.
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*Gastric Acidity Before and After Operative Procedure, with Special Reference to Role of Pylorus and Antrum: Preliminary Report of Clinical and Experimental Study. O. H. Wangensteen, R. L. Varco, L. Hay, S. Walpole and B. Trach, Minneapolis.—p. 626.
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Use of Intramuscular Injections of 2-Methyl-1, 4-Naphthoquinone in Treatment of Prothrombin Deficiencies, with Note on Role of Liver in Response to This and Other Substances with Vitamin K Activity. W. D. Andrus and J. W. Lord Jr., New York.—p. 783.

Blood Preservation.—Scudder obtained refrigerated plasma samples of varying ages from three different blood banks in New York City, unrefrigerated samples from Salisbury, N. C., plasma from the necropsy room of the Presbyterian Hospital and placental plasma from the Sloane Hospital for Women. To ascertain what effect the lyophile process has on serum proteins, a sample of dried serum was supplied by Ravdin from Philadelphia. The electrophoretic method of analysis of proteins reported by Longsworth and MacInnes was used. After a comparison of the values for preserved plasma with the values for fresh plasma in his studies and those of others, Scudder points out that the greatest change appears in the decrease of albumin as well as a change in the components which constitute the albumin/globulin ratio. Fibrinogen appears unaltered. A definite increase appears in the gamma globulin. This decrease in albumin and the increase in gamma globulin have been observed by Knoll. Two specimens which had been kept in a specially designed bottle showed the least change. In comparing the refrigerated samples with those that had been kept at room temperature and had been shipped about the country, the greatest difference was seen in the beta globulin fraction, the beta globulin disturbance was absent and the beta globulin/albumin ratio was decreased. The necropsy serum and plasma were abnormal. The placental plasma appeared within normal limits. The lyophilized serum presented an anomaly in that the beta disturbance was missing. It appears that postmortem blood is abnormal; this may not apply to blood collected from those who have died suddenly. Placental blood appears to be a normal source for conserved blood. Lyophiled serum appears abnormal. Refrigeration seems to enhance the preservation of plasma as did the shape of the flask. Possibly denaturation of plasma proteins is slower under these conditions.

Plasma Loss in Dehydration and Shock. — Minot and Blalock discuss the two factors vasodilatation and loss of circulating volume which lead to a deficiency of intravascular fluid and the measures for preventing and treating secondary or hematogenic shock. Under normal conditions many factors cooperate to maintain a fluid balance between the tissue cells and the extracellular spaces and in the vascular system. The fluid intake and electrolyte must keep pace with their loss from the body. There must be sufficient plasma protein to attract and hold an adequate volume of fluid in the blood stream. The selective permeability of the capillaries allows water and crystalloids to pass freely but withholds most of the protein in the blood stream. Renal activity removes metabolic waste products and any excess of fluid or electrolytes taken into the body. A serious abnormality in any of these factors may result in disastrous changes in the amount and partition of body fluid. Among the simpler abnormal conditions which may lead to a serious reduction in the volume of circulating blood are severe dehydration and extensive hemorrhage. In addition to these an abnormal partition of body water may arise from a nutritional lack of adequate plasma protein, as occurs in nutritional edema. Hypoproteinemia on a nutritional basis does not often lead to serious circulatory failure, but it must be corrected as it is a likely factor in the development of postoperative complications and some instances of pulmonary edema and pneumonia. Frequently an abnormal partition in body water occurs because the capillaries have been injured, permitting plasma protein, water and crystalloids to pass through the capillary endothelium into the tissue spaces. Mechanical, chemical or thermal trauma and oxygen lack are common causes of increased permeability of the capillaries. Although details of hematogenic shock vary with the condition initiating it, the problem of treating impending hematogenic shock is to restore and maintain a more effective circulation in the presence of the operative abnormalities. Attempts to increase vasoconstriction with drugs has failed as a means of preventing shock. More promising results were obtained from the administration of adrenal cortex extract, but still a large part of the treatment must be replacement of the elements lost from the blood stream. The difficulty of fluid replacement therapy varies with the different conditions, but the patient's needs for fluid and electrolytes must be met. Blood plasma has been most efficacious for fluid replacement. The introduction of aqueous solutions dilutes the plasma colloids in the blood stream and, if already low, further dilution prevents the retention of the administered fluid in the blood stream. Tissue edema develops while the blood stream remains dehydrated. If extensive capillary damage exists, the continuous adminis-

tration of fluid by vein washes out more protein and as a result may actually reduce rather than increase the volume of circulating blood. The best guide as to the disposal being made of intravenously administered fluid is afforded by frequent measurements of hematocrit or hemoglobin and of plasma protein. The use of plasma rather than of whole blood avoids further burdening of the circulation with cellular elements which are already present in high concentration. Volume for volume, plasma transfusions introduce protein approximately twice as fast as whole blood and there is less danger of reactions. The disadvantages of plasma are the technical difficulties and time required for preparing it for transfusion and the larger amounts of blood which must be furnished by donors. Therefore the value and convenience of an available "plasma bank" is evident. However, lacking plasma, transfusions of whole blood should be administered promptly and repeatedly. Many attractions are offered by desiccated or lyophiled blood serum. The dried powder can be kept indefinitely and be dissolved in a small volume of water, giving a solution richer in protein than fresh plasma. When whole blood or plasma cannot be procured, the blood volume may be restored by intravenous injections of acacia solutions.

Gastric Acidity Before and After Operations.—Wangensteen and his collaborators state that the surgical staff, while still adhering to orthodox indications for operative intervention, varied the surgical procedure with the thought of garnering useful information concerning the role of various operations in the management of ulcer and the manner in which their influence is mediated. In addition, experimental procedures have been carried out on the dog in an attempt to assay further the validity of Edkins's hypothesis of pyloric and antral hormone control of the gastric phase of gastric secretion. The occurrence of gastrojejunal ulcer in two cases in which antral resection had been done because of continued bleeding from a duodenal ulcer suggested this study. In both cases a previous gastro-enterostomy had been done and, when antral resection was performed, no evidence of a gastrojejunal ulcer was observed. In both cases gastrojejunal ulcer followed antral excision within a few months. Sixty cases in which the following types of operative procedure were done were available for study: (group 1) twenty-nine cases of retrocolic gastrojejunostomy, (group 2) six of antral excision with complete terminolateral anastomosis (Pólya), (group 3) ten of extensive gastric resection including pylorus and antrum, (group 4) six of antral exclusion with extensive gastric resection (Finsterer's operation) accompanied by either partial (Hofmeister) or complete retrocolic terminolateral anastomosis (Pólya), (group 5) three of Schmilinsky's operation with provision for complete intragastric regurgitation for gastrojejunal ulcer following antral excision, (group 6) five of tubular excision (fundus and corpus) with gastrojejunostomy, leaving the antrum and pylorus intact and (group 7) three of tubular excision (fundus and corpus) without gastrojejunostomy, leaving the antrum and pylorus intact. The postoperative observations made in these cases include studies of gastric acidity, gastric emptying time (employing the neutralization test) and gastric evacuation time determined fluoroscopically after the patient swallowed 150 cc. of a thin barium sulfate mixture. The authors found that: 1. Extensive gastric resection by itself does not produce achlorhydria to maximal stimulation (histamine), even when combined with bilateral subdiaphragmatic vagotomy (group 7). 2. Extensive gastric resection, when combined with gastrojejunostomy providing opportunity for partial intragastric regurgitation of duodenal content, will usually produce achlorhydria to maximal stimulation (histamine). The lapse of time is an important factor in the development of such achlorhydria. 3. Excision of the antrum and pylorus (the small or partial gastric resection) fails to make the residual gastric segment achlorhydric to maximal stimulation. 4. Allowing the antrum and pylorus to remain, as is indicated particularly by group 6, does not militate against securing an achlorhydric stomach to maximal (histamine) stimulation, granted that an extensive gastric resection of the acid secreting area is performed. Group 4 will, in time, shed additional light on this issue. 5. Gastrojejunostomy is not accompanied by achlorhydria to maximal stimulation. 6. The emptying time is decreased considerably in all anastomotic operations on the stomach (groups 1, 2, 3 and 4) and after extensive resection of the stomach without anastomosis (group 7). When the intragastric regurgitation of the duodenal content is complete, as it is in group 5, the emptying time is prolonged (barium sulfate evacuation time). On the basis of their observations the authors conclude that the Edkins hypothesis on the clinical side appears to be invalid. Proof of this lies in two occurrences: the consistent production of true achlorhydria in five cases in which there was duodenal ulcer after tubular resection of the corpus and fundus (attended by gastrojejunostomy), leaving the pylorus and antrum intact (group 6) and failure to produce true achlorhydria in cases of excision of the pylorus and antrum (group 2). On the experimental side their observations are still incomplete except that excision of the pylorus and antrum does not decrease the secretory capacity of fundic pouches. The importance of the acid factor in ulcer is emphasized by the occurrence of ulcers in cats after intragastric instillation of 0.4 per cent hydrochloride and after subcutaneous intramuscular implantation of histamine in beeswax.

Archives of Internal Medicine, Chicago

66:785-1010 (Oct.) 1940

*Observations on Induced Thiamine (Vitamin B_1) Deficiency in Man. R. D. Williams, H. L. Mason, R. M. Wilder and B. F. Smith, Rochester, Minn.—p. 785.
Pain in Shoulder as Sequela to Myocardial Infarction. A. C. Ernstene and J. Kinell, Cleveland.—p. 800.
Interauricular Septal Defect. W. S. Tinney Jr., Lancaster, Pa.—p. 807.
Relative Significance of Concentration of Inorganic Sulfate in Serum and of Its Renal Clearance, with Special Reference to Diffuse Arteriolar Disease with Hypertension. A. Goudsmit Jr. and N. M. Keith, Rochester, Minn.—p. 816.
Pancreatic Function in Case of Nontropical Sprue. Alice Childs and G. F. Dick, Chicago.—p. 833.
Normal Blood Pressure. A. E. Treloar, Minneapolis.—p. 848.
*Necrobiosis Lipoidica Diabeticorum. Alice G. Hildebrand, H. Montgomery and E. H. Rynearson, Rochester, Minn.—p. 851.
*Banti Syndrome (Fibrocongestive Splenomegaly): Definition, Classification and Pathogenesis. P. Ravenna, Chicago.—p. 879.
Gastro-Enterology: Review of Literature from July 1939 to July 1940. C. M. Jones, Boston.—p. 893.

Effect of Induced Thiamine Deficiency in Man.—Williams and his associates confirm the observations of Williams, Mason and Smith by their own work, in which six subjects received a diet for eighty-eight days which provided less than 0.15 mg. of thiamine hydrochloride (50 international units of vitamin B_1) daily but which was otherwise adequate. After eleven days two of the subjects were given thiamine hydrochloride orally, without their knowledge, in gradually increasing daily doses. The four subjects who obtained no supplementary thiamine experienced striking evidences of nutritional deficiency. The two subjects whose diets were supplemented also showed evidences of deficiency until their total daily intake of the vitamin reached 0.95 mg. From then on they were free from symptoms and performed as effectively on a chest weight exercise machine as at the start of the study. With further increases of thiamine they improved still more, and when the daily intake reached 2 mg. they were strikingly more alert and attentive and their performance of the exercise was much more satisfactory than it had been originally. When the intake of thiamine was lowered by a return to the routine hospital diet, well-being, alertness and work performance again fell to the original level. This indicates that the institutional diet, which contained approximately from 0.6 to 0.8 mg. of thiamine hydrochloride daily, provided less than an optimal allowance. The food in this hospital compares favorably with that in most institutions and therefore institutional diets in general may be criticized on this score. The isolated withdrawal of thiamine from the diet did not produce beriberi. In the earlier study four subjects were given food that contained less than 0.15 mg. of thiamine daily for 147 days, and the four subjects of the present study received a diet that provided less than 0.15 mg. for eighty-eight days. Yet edema, cardiac dilatation and neuritic pain were absent in both groups. Mild tenderness of the muscles of the calves and paresthesia of the feet and legs and diminution of tendon reflexes were

observed. Pain to any degree was not present. The authors wonder whether thiamine is the vitamin the lack of which is responsible for the classic features of beriberi. They suggest that deficiency of the factors of the vitamin B complex other than thiamine may be more important in the production of such features than thiamine itself. The early stage of the condition induced by the restricted intake of thiamine closely resembled neurasthenia; the later stage simulated anorexia nervosa. The authors suggest that states of thiamine deficiency, as these exist in our part of the country, where few cases of beriberi or pellagra are encountered, should be looked for principally in cases rightly diagnosed as neurasthenia.

Necrobiosis Lipoidica Diabeticorum.—Hildebrand and her co-workers point out that since Oppenheim's description in 1929 of necrobiosis lipoidica diabeticorum seventy-eight cases have been reported, to which they add the eight encountered at the Mayo Clinic since 1936, when the first case was registered. In more than 87.2 per cent of all the cases diabetes mellitus has also been present, in a few instances the cutaneous lesions preceded the onset of diabetes by as long as eight years and among 10 per cent of patients with these lesions diabetes has not yet appeared. In those with diabetes the cutaneous lesions had developed from several months to as long as seventeen years after the onset of the diabetes. Aside from the high incidence of diabetes, study has failed to reveal the presence of any predominant associated disease which might have etiologic significance. All the patients were white and more than 80 per cent of them were women. The cutaneous lesions usually appeared when the patients were between 10 and 40 years of age, the average being 35 years. In the majority of the cases the diabetes has been poorly controlled throughout its course. Trauma seemed to play a definite part in the causation of the cutaneous condition, as from 12 to 16 per cent of the patients stated that bruises, cuts, scratches and mosquito bites preceded the necrobiosis. In approximately 85 per cent of all cases reported elsewhere and in 82 per cent of the authors' cases the lesions occurred on one or both legs below the knees. A diagnosis of necrobiosis lipoidica diabeticorum is possible on the clinical appearance of the lesions alone. The plaques are flattened with yellowish centers surrounded by violescent or red-brown borders, with or without central ulceration. These lesions differ from other xanthomatoses, which are usually firm, yellowish papules occurring on the extensor surfaces of all four extremities. The intracellular deposit of lipoids in foam cells in the latter lesions makes recognition final. The pathogenesis of the condition remains obscure. Because of the vascular changes seen in the lesions, many authors have assumed that the disease is due to damage to the small blood vessels of the corium, possibly by circulating toxins, with subsequent thrombosis, necrosis and secondary imbibition of fat particles. Another hypothesis assumes a local lipoid disturbance in the skin, based on a general disturbance in fat metabolism. Neither hypothesis has proved satisfactory. Treatment, either local or general, for most patients with diabetes mellitus has been of little avail. The cutaneous lesions typically run an indolent, chronic course, either slowly enlarging over a period of months or years or slowly receding to form depressed scars. Control of the glycosuria with proper diet and insulin seems to have little effect on them, although some authors have reported good results with diets low in fat. Three of the patients at the Mayo Clinic were placed on such a diet but no improvement occurred after they had been observed for from several months to a year. Local treatments, including injection of insulin at the site of the lesions, ultraviolet irradiation and various local medications, have been unsuccessful in accelerating healing.

Banti Syndrome.—According to Ravenna, accumulating evidence supports the view that Banti's splenomegaly is largely due to splenic congestion and that this congestion is not dependent on portal-venous obstruction. The congestion may be due to primary lesions of the small splenic arteries which regulate the blood flow into the spleen ("primary active congestion"). The human spleen should be considered an elastic rather than a contractile organ. Its variations in size depend on variations in the volume of inflowing blood rather than on active contractions of the smooth muscle of its supporting framework. Mechanically the spleen might be defined as an automatic controller which regulates the pressure of the splenic venous blood in order to maintain the balance between the volume of inflowing blood and the amount which can be discharged through hepatic resistance. In pathologic conditions the splenic elasticity guarantees a pressure sufficient to secure the further progress of venous portal blood. Congestive splenic enlargement is therefore a mechanism to counterbalance either an increased volume of portal blood or an increased peripheral resistance to the discharge of a normal amount of blood. The Banti syndrome is a symptom complex dominated by chronic fibrocongestive splenomegaly, accompanied by portal hypertension and complicated by, or associated with, hepatic cirrhosis or thrombosis of the splenic and portal veins. It may depend on various determinable causative agents, either infective or toxic, or undeterminable ones. The splenic changes of the Banti syndrome are probably due to primary lesions of the splenic arterioles, the regulating power of which becomes insufficient to control the inflow of blood. The consequent congestive splenomegaly is the cause of the circulatory disturbance in the portal bed. Secondarily, hepatic cirrhosis and venous thrombosis may aggravate the state of portal circulation.

Archives of Surgery, Chicago

41:813-1042 (Oct.) 1940

*Experimental Studies on Headache: Pain Sensitive Structures of Head and Their Significance in Headache. B. S. Ray and H. G. Wolff, New York.—p. 813.
Direct Inguinal Hernias: Study of 605 Hernias and 565 Repairs. H. J. Shelley, Fort Worth, Texas.—p. 857.
Use of Serial Dilutions in Determination of Prothrombin by One Stage Technic. J. G. Allen, O. C. Julian and L. R. Dragstedt, Chicago.—p. 873.
Localization of Staphylococci in Areas of Inflammation Produced by Xylene. R. H. Rigdon, Memphis, Tenn.—p. 879.
*Cancer of Tongue. H. E. Martin, H. Munster and E. D. Sugarbaker, New York.—p. 888.
Perforation as Complication of Gastric Carcinoma. M. A. Casberg, St. Louis.—p. 937.
*Ischemic Contracture of Lower Extremity. T. Horwitz, Philadelphia.—p. 945.
Factor of Bile Stasis in Experimental Production of Gallstones in Dogs. H. G. Aronson, Chicago.—p. 960.
Cause of Death in Cases of Mechanical Intestinal Obstruction: Consideration of Certain Confused Issues and Review of Recent Literature. E. L. Besser, Iowa City.—p. 970.
Acute Metastatic Spinal Epidural Abscess: Report of Two Cases with Recovery Following Laminectomy. D. L. Reeves, Los Angeles.—p. 994.
A Soluble Rod as Aid to Vascular Anastomosis: Experimental Study. S. Smith, Chicago.—p. 1004.
*Acute Pancreatitis: Etiologic Review and Report of Thirty-Five Cases. E. F. Lewison, Baltimore.—p. 1008.
Lymph in Experimental Burns. G. O. Wood, Nashville, Tenn.—p. 1038.

Experimental Studies on Headache.—Ray and Wolff present data on the pain sensitive structures inside and outside the cranium obtained from 150 observations on thirty patients during operative procedures. The following conditions prevailed among the thirty patients: 1. Surgical exposure of cerebral lesions afforded an opportunity to make careful observations on the sensitivity to pain. 2. The patients were intelligent and cooperative, so that pain, its site and its nature could be determined. 3. The patients were relatively free of apprehension and of preoccupation with pain, requiring minimal analgesia. 4. The operative procedures were such that the patients were not prostrated or inarticulate and therefore could describe their sensations. 5. The stimulated structures were free of disease, insuring normal responses. Some of the "pain pathways" and mechanisms of headache after various stimuli were as follows: 1. The tissues covering the cranium are all more or less sensitive to pain, the arteries especially so. 2. Of the intracranial structures, the great venous sinuses and their tributaries from the surface of the brain, parts of the dura at the base, the dural arteries and the cerebral arteries at the base of the brain are sensitive to pain. 3. The cranium (including the diploic and emissary veins), the parenchyma, the dura, the pia-arachnoid, the ependymal lining of the ventricles and the choroid plexuses are not sensitive to pain. With the exception of sensations resulting from stimulation of the parenchyma and nerves, the only sensation of the intracranial structures was pain. Stimulation of the pain sensitive intracranial structures on or

above the superior surface of the tentorium cerebelli resulted in pain (pathways in the fifth cranial nerve) in various regions in front of a line drawn vertically from the ears across the top of the head; stimulation on or below the inferior surface resulted in pain behind this line. The pathways for this pain are chiefly in the ninth and tenth cranial and the upper three cervical nerves. From the data available, headache may result from (1) traction on the veins that pass to the venous sinuses from the surface of the brain and displacement of the great venous sinuses, (2) traction on the middle meningeal arteries, (3) traction on the large arteries at the base of the brain and their main branches, (4) distention and dilatation of intracranial and extracranial arteries, (5) inflammation in or about any of the pain sensitive structures of the head and (6) direct pressure by tumors on the cranial and cervical nerves. Intracranial diseases cause headache by involvement of more than one pain sensitive structure. Headache from intracranial disease is usually referred pain. Unilateral hyperalgesia localized in the parietal area may indicate a lesion near the middle meningeal artery, and hyperalgesia localized to the postauricular region a lesion about the internal auditory meatus.

Cancer of Tongue.—Martin and his associates studied the records of 556 consecutive patients with lingual cancer admitted to the Memorial Hospital during 1927 to 1934 inclusive. This series comprises all patients with microscopically proved lingual cancer except those observed for less than one month. At the Memorial Hospital lingual cancer comprises about 15 per cent of all tumors of the upper respiratory and alimentary tracts and about 25 per cent of all intra-oral tumors. The average age of the 556 patients was about 58 years at the time of admission; 87 per cent of the patients were men and 13 per cent were women. Chronic irritation was a predominating apparent etiologic factor in growths of the middle and anterior thirds of the tongue where precancerous changes, such as chronic diffuse or localized glossitis and leukoplakia, occur most often. At the base of the tongue, tissue changes as a result of chronic irritation are less definite. Such chronic irritation (leukoplakia, chronic glossitis and dental sepsis) are much more prevalent in men than in women, supporting the etiologic relationship of chronic irritation to intra-oral cancer. The chronicity of the irritant is more important than its nature. Single traumas probably have little effect. Routine Wassermann tests revealed that about 33 per cent of the patients had syphilis, in whom the immediate etiologic factor undoubtedly was the chronic glossitis of late syphilis. The influence of tobacco on lingual cancer is difficult to estimate; about 75 per cent of the male patients admitted moderate to heavy use of tobacco. This figure loses most of its significance, as even a higher percentage of the general adult male population uses tobacco. Only 9 per cent of the women admitted smoking. If only the nonsmokers of both sexes are considered, the disease is still more than twice as frequent in men as in women. In the sixth and seventh decades, when the incidence of intra-oral cancer is greatest, a large percentage of the general population has suffered dental diseases and defects for prolonged periods. However, their presence may be coincident with the "cancer age" rather than its direct cause. As with tobacco, dental factors render affirmation or denial impossible. Only 10 per cent of the patients had clean teeth in good repair. In clinic patients dental defects and sepsis were almost the rule. In a few instances the association of sharp, broken or worn teeth or ill fitting dentures with the growth is evident. The primary early small lesion was treated with radon seeds. Fractionated peroral roentgen irradiation supplemented by radon seeds was used for all except the small growths. Fractionated roentgen irradiation through the neck followed by supplementary radon seeds was used for cancer of the base of the tongue. Radon seeds ("overdosage") followed in from five to ten days by partial glossectomy was indicated for only a few bulky, fungating, partly necrotic tumors. The following variations were also employed: (1) roentgen irradiation for extremely radiosensitive tumors, supplementary interstitial irradiation being probably indicated in all cases, (2) low voltage, lightly filtered peroral roentgen irradiation for superficial growths on the anterior portion and dorsum of the tongue and (3) surgical excision for fungating papillary tumors at the tip of the tongue. Complications following surgical procedures are apt to be acute and severe but of short duration; those following irradiation tend to be of lesser degree but of longer duration. Except in the earliest stages when the tumor is small and is situated on the edge of the anterior half of the tongue the prognosis of lingual cancer is bad. The average duration of life among the patients from the first symptom to death was twelve months, varying between two months and seven years when the immediate postoperative deaths are excluded. The five year end results of the 556 patients were as follows: Fifty-three patients without recurrence died of other causes. Five without recurrence were lost track of. Of the remaining 498, 368 died as a result of the cancer, two with a recurrence were lost track of and probably are dead, four are living with a recurrence of their cancer and 124 are free from lingual cancer five or more years after treatment. Thus a five year cure rate of 25 per cent obtains if the 124 successful results are divided by the determinate group of 498.

Ischemic Contracture of Lower Extremity.—Horwitz reports two cases of disabling deformities of the right lower extremity which persisted for eleven and fourteen years respectively. The two cases presented the following features: (1) healed fractures of the femur, (2) massive induration of the muscles of the leg and foot associated with atrophy and loss of motor power below the knee, (3) vascular dysfunction in the involved lower extremity, (4) contractural deformities of the foot and toes, (5) x-ray evidence of extra-osseous calcification of the leg and (6) histologic evidence in one case of massive degeneration of muscular tissue with fibrous tissue replacement and extensive calcification. In both cases the pathologic state in the lower extremity was identical with Volkmann's ischemic contracture. On the basis of his two cases and a review of eighteen cases reported in the literature the author concludes that such ischemic contracture must be anticipated after fracture or extensive injury to the soft tissues without fracture in the lower extremity, especially in the region of the knee and leg. The contracture and deformity may be avoided by fasciotomy during the acute (prodromal) stage. Deformities following contractures may be corrected by nonoperative and operative measures.

Acute Pancreatitis.—Lewison states that there were thirty-three cases of acute pancreatitis among 100,000 admissions between 1921 and 1939 to the Beth Israel Hospital. This incidence coincides with that reported by other investigators, but the author believes that its rarity may have been overestimated. Serum amylase and lipase studies indicate that acute pancreatitis may be mild and more prevalent than heretofore believed. In the milder form it may masquerade as biliary colic. The diagnosis of the thirty-three cases and two treated elsewhere was established or confirmed at operation. Cases of manifest chronic pancreatitis, acute pancreatitis secondary to primary processes elsewhere, acute pancreatitis resulting from perforation of a peptic ulcer and pancreatic calculi were not considered. The author points out that a consideration of its pathogenesis demonstrates a significant relation to organic diseases and to functional disturbances of the biliary tract. Etiologic agents incapable when acting individually of producing this disease may, when combined, assume a principal pathogenic role. Hemorrhagic, edematous, suppurative and gangrenous types of pancreatitis have been distinguished and each requires individual attention regarding diagnosis, prognosis, prophylaxis and treatment. There was a mortality of 17 per cent in the thirty-five operative cases of acute pancreatitis reported. Of these, 54 per cent were of type 1—acute edematous pancreatitis, a rather benign phase of the disease. Pain and tenderness, usually in the epigastrium or the upper part of the abdomen, were constant clinical observations. Radiation of pain to the back, vomiting and a history of similar recurrent attacks were elicited frequently. Incision and drainage of the pancreas combined with one or more ancillary procedures was carried out in 77 per cent of the cases. Use of the serum amylase test as an aid in diagnosis may tend to modify conservatively the future surgical treatment of acute pancreatitis.

Indiana State Medical Assn. Journal, Indianapolis

33:499-602 (Oct.) 1940

Recent Outbreak of Poliomyelitis in Indiana. V. K. Harvey and T. B. Rice, Indianapolis.—p. 499.
Sodium Sulfapyridine: Its Chemotherapeutic Action and Toxicity. H. M. Powell and K. K. Chen, Indianapolis.—p. 503.
Statistical Analysis of 1,700 Sudden and Violent Deaths. W. E. Kruse, Fort Wayne.—p. 509.
Acute Perforative Appendicitis. M. B. Welborn, Evansville.—p. 517.
Fractures of Neck of Femur: General Consideration of Some Methods of Treatment and Special Reference to Use of the Two-Plane Direction and Range Finder of Engle and May. J. S. Robison, Winchester.—p. 520.
Gastric Anemia Syndromes. M. Sandorf and M. Davidhoff, Indianapolis.—p. 523.

Johns Hopkins Hospital Bulletin, Baltimore

67:229-308 (Oct.) 1940

Current Bronchopneumonia of Unusual Character and Undetermined Etiology. Y. Kneeland Jr. and H. F. Smetana, New York.—p. 229.
*Bronchopneumonia of Unknown Etiology (Variety X): Report of Thirty-Two Cases with Two Deaths. W. T. Longcope, Baltimore.—p. 268.

Bronchopneumonia of Unknown Etiology. — Longcope describes the clinical course of the infection variously called atypical pneumonia, pneumonitis and bronchopneumonia. There is evidence of its contagiousness and it may be extremely severe. For convenience he designates the disease "bronchopneumonia, variety X". During the last few years he has observed thirty-two completely investigated cases. The ages of the patients ranged from 17 to 70 years. Seventeen were between 20 and 30 years of age. Twenty of the patients were men, eleven of whom were doctors, medical students, orderlies or hospital employees. Twelve of the patients were women and seven of these were nurses. The disease occurred at all seasons of the year, though eighteen cases were encountered during October, November and December. Ten cases occurred from May to September inclusive. Pneumococcic pneumonia is most prevalent in Baltimore from December to May, a period during which only eight of the cases under discussion were encountered. The incubation period is from about fourteen to twenty-one days. Usually the acute phase of the disease was preceded by a day or two of malaise with a rasping and nonproductive cough, and then fever accompanied by increasing cough, headache, general aches and discomfort, chilly sensations and occasionally abdominal pain and nausea. Only six of the thirty-two patients had an actual chill at onset. Five complained of pain in the chest, which was not sharp or stabbing and was rarely affected by respiration. Two had epistaxis as an early symptom. Four had pharyngitis due to beta hemolytic streptococci accompanying the onset of the disease. When the patients were first seen, often on the first to the third day of their illness, the temperature varied from 102 to 105 F. Usually the pulse rate and respiration were not proportionately elevated. The patients did not appear or feel very ill. The most annoying symptom was the rasping, nonproductive cough. Sometimes there was a small amount of sputum, which in a few instances was blood tinged but not rusty. The throat was sometimes reddened. The lungs during the first few days of illness usually showed no conspicuous abnormality, though a few patients presented a slight dulness over one or the other lower lobes, with suppressed breath sounds and a few fine rales over this area. A common characteristic of the disease in the early stages was a moderate leukopenia. The onset of the disease was similar in most cases, but the subsequent course varied from a mild infection to extreme gravity or fatality. The study throws no light on its etiology. Blood cultures made, often repeatedly, in twenty-seven of the cases gave no growth. The occasional occurrence in the sputum of a few nonpathogenic pneumococci which could not be typed can have little significance. The appearance of hemolytic staphylococci in the sputum during the latter stages of the disease in two cases suggests that secondary infections by pathogenic bacteria may occur. No serious attempt was made to isolate a filtrable virus, but experiments to accomplish this with the solidified lung in one of the two fatal cases resulted in failure. The reported results of such work by Reimann and by Francis and Magill are of uncertain significance, and the experience of Kneeland and Smetana shows that if a filtrable virus is the cause of the disease it has not been definitely identified. However, many features of the disease suggest a filtrable virus. These are its contagiousness, the long incubation period, the inability to demonstrate any known pathogenic bacteria and the peculiarity of the pathologic pulmonary changes, for the exudate in the alveoli has been found to consist largely of mononuclear cells. The clinical features of the disorder appear sufficiently distinctive to allow one, even without knowledge of its etiology, to recognize the infection as a disease entity. Significant features for such an assumption are its characteristic onset, the prolonged persistence of symptoms and signs, the migration of the pulmonary lesions from one lobe to another, the biphasic elevation in temperature and the appearance of many fine, coarse or explosive rales during convalescence.

Journal of Allergy, St. Louis

11:537-652 (Sept.) 1940

Antigenic Relationship of Cotton Linters, Dust and Dust Precursors. E. J. Coulson and H. Stevens, Washington, D. C.—p. 537.
*Electrolyte and Water Exchange in Bronchial Asthma, with Emphasis on Influence of Pitressin. A. V. Stoesser and M. M. Cook, Minneapolis.—p. 557.
Note on Serum Sodium Concentrations of Allergic and Nonallergic Persons. P. B. Donovan and G. F. Harsh, San Diego, Calif.—p. 567.
Study in Food Allergy: Relationship Between Allergic Activity and Protein Fractionization of Selected Foods. J. J. Engelfried, Ann Arbor, Mich.—p. 569.
Studies on Colloidal Gold Phenomena in Allergy. M. H. Grow and H. A. Stiff, Dallas, Texas.—p. 578.
The Future of Allergy: Presidential Address. W. T. Vaughan, Richmond, Va.—p. 584.
Poison Oak and Poison Ivy: I. Dermatitant Units as Standard Measure of Potency for Extracts from These Plants. E. K. Stratton, San Francisco.—p. 591.
Susceptibility to Poison Ivy Dermatitis. L. Zisserman, Philadelphia.—p. 600.

Electrolyte and Water Exchange in Bronchial Asthma. —Stoesser and Cook observed a group of children with persistent bronchial asthma in whom certain changes in the electrolyte and water balance caused definite variations in the degree of asthma. Placing the patients on a special low mineral, acid-ash diet which induced a low water retention improved the asthmatic condition, and subsequent artificial fever often caused the asthmatic symptoms to disappear. The remissions brought about by these procedures could be terminated by adding sodium chloride to the special diet or returning the patients to the general hospital diet, which was without salt restriction. During the periods of such diets artificial fever produced no consistent favorable influence on the asthma. These observations led the authors to determine the relationship between the electrolyte and water balance in the mechanism of asthmatic attacks. Pitressin offered a means of determining whether the increased water storage or the extra salt was instrumental in precipitating the symptoms. Pitressin, when injected subcutaneously, causes a retention of body fluids without the aid of an increase in body salts. Many asthmatic children were given pitressin, and six of them with intractable asthma who tolerated it were subjected to special studies. A total of twenty observations was made. The subjects were placed on an extremely low sodium chloride diet, and when pitressin was administered some retained as much as 2 Kg. (4⅖ pounds) of water. The asthma began to improve during the antidiuretic phase and continued through the diuretic and subsequent periods, proving that the storage of large amounts of water in the body and its sudden loss had little influence on the asthmatic symptoms. A review of the literature shows that during pitressin antidiuresis and diuresis, despite a low salt intake, sodium chloride is excreted, leading to a marked loss of body salt. It appears that bronchial asthma can be ameliorated, even in the presence of excessive hydration, if an associated depletion of sodium chloride exists. The authors draw no conclusions but point out that the study is of value as an investigative tool rather than a therapeutic procedure.

Journal of Aviation Medicine, St. Paul

11:101-140 (Sept.) 1940

Experimental Study on Effect of Noise on Gastric Secretion in Pavlov Dogs. P. E. Vaughan and E. J. Van Liere, Morgantown, W. Va.—p. 102
Intra-Ocular Pressure at High Altitudes. E. A. Pinson, Dayton, Ohio.—p. 108.
The Primary Flight Phase: Psychobiologic Consideration of Early Instruction in Flying. H. B. Porter, Washington, D. C.—p. 112.

Journal of Experimental Medicine, New York

72:331-548 (Oct.) 1940

Infection of Guinea Pigs by Application of Virus of Lymphocytic Choriomeningitis to Their Normal Skins. H. J. Shaughnessy and J. Zichis, Chicago.—p. 331.
Depressor Effect of Splenorenopexy on Hypertension Due to Renal Ischemia. D. M. Weeks, A. Steiner, J. S. Mansfield and J. Victor, New York.—p. 345.
Studies on Sensitization of Animals with Simple Chemical Compounds: VIII. Sensitization to Picric Acid: Subsidiary Agents and Mode of Sensitization. K. Landsteiner and A. A. Di Somma, New York.—p. 361.
Prolonged Coexistence of Vaccinia Virus in High Titer and Living Cells in Roller Tube Cultures of Chick Embryonic Tissues. A. E. Feller, J. F. Enders and T. H. Weller, Boston.—p. 367.
Soluble Antigen of Lymphocytic Choriomeningitis: III. Independence of Antisoluble Substance Antibodies and Neutralizing Antibodies, and Role of Soluble Antigen and Inactive Virus in Immunity to Infection. J. E. Smadel and M. J. Wall, New York.—p. 389.
Studies of Murine Strain of Poliomyelitis Virus in Cotton Rats and White Mice. C. W. Jungeblut and M. Sanders, New York.—p. 407.
Use of Ultraviolet Light in Preparing Nonvirulent Antirabies Vaccine. H. L. Hodes, L. T. Webster and G. I. Lavin, New York.—p. 437.
Influence of Age Factors on Susceptibility of Mice to Rabies Virus. J. Casals, New York.—p. 445.
Influence of Age Factors on Immunizability of Mice to Rabies Virus. J. Casals, New York.—p. 453.
Nutritional Cytopenia in Monkeys Receiving Goldberger Diet. P. L. Day, W. C. Langston, W. J. Darby, J. G. Wahlin and Virginia Mims, Little Rock, Ark.—p. 463.

Journal of Lab. and Clinical Medicine, St. Louis

26:1-286 (Oct.) 1940. **Partial Index**

Autonomic Nervous System Considered in Relation to Experimental and Clinical Phenomena. D. E. Jackson, Cincinnati.—p. 4.
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Clinical Laboratory Determination of Vitamin Nutrition. H. Field Jr. and D. Melnick, Ann Arbor, Mich.—p. 45.
Role of Blood Clotting Anomalies in Hemorrhagic Diseases. J. H. Ferguson, Ann Arbor, Mich.—p. 52.
Preserved Blood "Banks" in Relation to Transfusion in Treatment of Disease. J. A. Kolmer, Philadelphia.—p. 82.
*Treatment of Allergic Disorders with Histamine and Histaminase. H. L. Alexander, St. Louis.—p. 110.
Possible Significance of Inhibitory Effect of Fever on Anaphylactic Phenomena. P. de Kruif, Holland, Mich., and W. M. Simpson, Dayton, Ohio.—p. 125.
Serology of Syphilis. R. L. Kahn, Ann Arbor, Mich.—p. 139.
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Some Chemical Observations on Human Heart in Health and Disease. V. C. Myers and G. H. Mangun, Cleveland.—p. 199.
*Functions of Carotid and Aortic Bodies. C. F. Schmidt, Philadelphia.—p. 223.
Epilepsy: Newer Methods of Investigation and Treatment. W. G. Lennox, Boston.—p. 232.
Medical Problems of High Altitude Flying. H. G. Armstrong and J. W. Heim, Dayton, Ohio.—p. 263.

Histamine and Histaminase for Allergic Disorders.—According to Alexander, evaluation of the therapeutic efficacy of histamine and histaminase for allergic disorders must be tentative for the present. Reported experience shows a rather striking similarity between the clinical effectiveness of the two. Neither appears to be of value for extrinsic allergy as asthma and hay fever, in which an immunologic mechanism is involved. Both are effective in urticaria, angioneurotic edema and physical allergy; that is, intrinsic allergy. This suggests that histamine operates through the production of histaminase. That intrinsic allergy responds to it and the extrinsic form does not leads to the question whether the H substance released by the one is qualitatively the same as that elaborated on contact between allergen and antibody. The question whether H substance is really histamine has been raised frequently and there are indications that the two are not identical. The limiting of histamine and histaminase therapy to intrinsic allergy, which is by far the more intractable type, shows sufficient promise to warrant further investigation.

Functions of Carotid and Aortic Bodies.—Schmidt reviews the knowledge of the functions of the carotid and aortic bodies. The function of these structures is to respond to changes in the chemical composition of the arterial blood by setting up afferent impulses which enter the central nervous system with the glossopharyngeal and vagus nerves, respectively. These impulses are stimulant to the medullary centers (respiratory, vasomotor and, in the case of the carotid body of the dog, cardio-inhibitory). The impulses from the stretch receptors of the carotid sinuses and aortic arch are inhibitory to these centers (except the cardio-inhibitory, which is stimulated by them). The chemically sensitive receptors (chemoreceptors) can be stimulated by anoxemia, asphyxia, increased carbon dioxide tension or increased hydrogen ion concentration or by a variety of drugs and poisons. Reflexes from these structures are responsible for much, if not all, of the stimulant effects of anoxia on respiration and circulation. They probably are not concerned in the normal control of respiration unless the centers are depressed, in which event these reflexes become an important factor in maintaining respiration. An explanation that is in accord with existing information is that the chemoreceptors represent a survival in a relatively undifferentiated form of a reflex mechanism originally developed for a water-breathing ancestral form. The ability of these structures to set up a strong reflex stimulation to respiration when exposed to an environment that would depress or paralyze nerve cells (severe anoxia, high carbon dioxide tension or acidity, deep narcosis) is probably related to their primitive status and responsible for much, if not all, of their value to the organism.

New England Journal of Medicine, Boston

223:523-560 (Oct. 3) 1940

Protrusion of Lower Lumbar Intervertebral Disks. W. J. Mixter and J. S. Barr, Boston.—p. 523.
Acute Surgical Emergencies of Abdomen in Pregnancy. J. A. Smith and M. K. Bartlett, Boston.—p. 529.
Severe Hemorrhage from Head and Neck: Its Management, with Report of Case Showing Retroparotid Space Syndrome. H. L. Albright, Boston.—p. 532.
Clinical Management of Breast Tumors. G. W. Taylor, Boston.—p. 538.
Rocky Mountain Spotted Fever: Analysis of Seven Cases, Including One Laboratory Infection. E. P. Campbell, Philadelphia, and W. H. Ketchum, Washington, D. C.—p. 540.
Urologic Surgery: Urethral Catheter. W. C. Quinby, Boston.—p. 543.

223:561-606 (Oct. 10) 1940

*Weil's Disease in the United States: Report of Case in Connecticut. F. G. Blake, New Haven, Conn.—p. 561.
Advances in Roentgen Ray Treatment of Tumors of Bladder. F. H. Colby and R. Dresser, Boston.—p. 565.
Rib Joints. J. E. Goldthwait, Boston.—p. 568.
Primary Echinococcic Cyst of Uterus. M. L. Welcker, G. D. Kaneb and R. H. Goodale, Worcester, Mass.—p. 574.
Mental Problems of Mid Life: Review of 100 Cases. C. T. Prout and A. U. Bourcier, Arlington Heights, Mass.—p. 576.
Thoracic Surgery. E. D. Churchill, Boston.—p. 581.

Weil's Disease in the United States.—Blake points out that since 1935 sporadic cases of Weil's disease have been recorded with increasing frequency in the United States. In five of these the diagnosis seems to have been adequately supported by confirmatory laboratory tests, namely successful transmission of the infection to guinea pigs, demonstration of Leptospira icterohaemorrhagiae at necropsy or the development of specific agglutinins to a titer of 1:30,000. A number of other, less well documented, cases have been reported. The author cites the clinical history of a man aged 29 who, on Nov. 11, 1939, was suddenly seized with pain in the calves of both legs, weakness and dizziness. He developed chills, fever and headache and his neck became stiff and painful. He was nauseated and vomited frequently. His physician sent him to the hospital on the morning of November 12. On admission the patient appeared acutely ill, bathed in perspiration, pale, weak and apprehensive. The conjunctivas were injected, the lips and tongue were dry. The neck was stiff and painful. The lungs showed a few moist rales. The blood pressure was 96 systolic, 68 diastolic. There was tenderness of the abdominal muscles. The liver and spleen were not felt. All deep reflexes were slightly hyperactive. The abdominal reflexes were lacking. The Kernig test was negative. The white cell count was 27,350. A lumbar puncture showed an initial pressure of approximately 250 mm. of water. The fluid had a cell count of 30 per cubic millimeter, mostly red blood cells; a Pandy test was negative; a culture showed no growth. Blood cultures showed no growth. Agglutination tests for typhoid, paratyphoid and brucellosis were negative. The predominant symptoms during the first four days were prostration, fever, headache, meningismus and severe myalgia, principally in the neck, back and legs. On the third day epistaxes began, recurring at intervals until the thirteenth day. A second lumbar puncture on the fourth day revealed a clear spinal fluid under

normal pressure with 80 red blood cells per cubic millimeter. On the fifth day moderate jaundice developed; it lasted about a week. The liver became palpable and tender. From the tenth day on, the patient steadily improved. He was discharged on the nineteenth day for further convalescence at home, no diagnosis having been established. After returning home the patient again developed headache and soreness in the legs. His appetite was poor, and he felt drowsy and feverish. His vision seemed slightly blurred, and he vomited. On the twenty-seventh day of his illness he was again admitted to the hospital. A few days after admission, review of the clinical course of the illness suggested Weil's disease. The patient stated that about ten days before the onset of his disease he had been engaged in tearing down an old barn which was swarming with rats. Dark field examination of the urinary sediment, possibly too late for a positive result, failed to reveal leptospirae, but samples of blood serum collected on the thirty-eighth and forty-seventh days were reported to show complete agglutination with type 1 Leptospira icterohaemorrhagiae to a dilution of 1:10,000 and 1:30,000, respectively. Taken in conjunction with the history of exposure to rats, an appropriate incubation period and the typical course of the illness, the positive agglutination tests seem adequate to establish the diagnosis of Weil's disease. The author concludes that the more frequent recognition and diagnosis of Weil's disease depends on a wider appreciation of its prevalence, a greater familiarity with its clinical symptomatology, particularly that of the initial preicteric stage, and a more frequent use of laboratory tests of proved diagnostic value.

New Orleans Medical and Surgical Journal

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Functional Uterine Bleeding. W. Long, Oklahoma City.—p. 169.
Conservative Care of Acute Pyosalpinx in Young Women. B. C. Garrett, Shreveport, La.—p. 175.
The Elderly Primipara. J. S. Herring, New Orleans.—p. 177.
General Discussion of the Problems of Old Age. I. L. Robbins, New Orleans.—p. 184.
Nervous and Mental Aspects of Old Age. T. A. Watters, New Orleans.—p. 187.
Medical Treatment of the Aged. A. Eustis, New Orleans.—p. 193.
Surgery in the Aged. I. Cohn, New Orleans.—p. 196.
Medicine as a Vocation. Shirley C. Lyons, New Orleans.—p. 199.
Reconstruction Operations for Fracture of Neck of Femur with Nonunion. R. H. Alldredge, New Orleans.—p. 201.
Surgery in Treatment of Pulmonary Tuberculosis. P. R. Gilmer, Shreveport, La.—p. 208.

Surgery, Gynecology and Obstetrics, Chicago

71:409-568 (Oct.) 1940

*Malignant Melanomas: Report of Four and Seven Year Cures. J. B. Brown and L. T. Byars, St. Louis.—p. 409.
Pathologic Physiology of Joints. H. Kelikian, Chicago.—p. 416.
*Congenital Atresia of Extrahepatic Bile Ducts. N. F. Hicken, Salt Lake City, and H. G. Crellin, Pittsburgh.—p. 437.
Superiority of Neoarsphenamine and Sulfathiazole in Therapy of Staphylococcus Aureus Infections in Marrow Cultures. E. E. Osgood, Julia Joski and Inez E. Brownlee, Portland, Ore.—p. 445.
Hydration of Hyperthyroid Patients and Its Relationship to Edema, Especially Cerebral. W. Bartlett Jr., St. Louis.—p. 450.
*Primary and Secondary Neurilemmoma of Bone. D. A. DeSanto and E. Burgess, New York.—p. 454.
Comparison of Irving and Pomeroy Methods of Tubal Sterilization. Frances Hill Fox, Boston.—p. 462.
Nervous Factor in Traumatic Shock. V. Lorber, H. Kabat and E. J. Welte, Minneapolis.—p. 469.
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Surgical Treatment of Unequal Leg Length. P. H. Harmon, Sayre, Pa., and W. M. Krigsten, Sioux City, Iowa.—p. 482.
Diverticula of Urinary Bladder: Clinical Study of 236 Cases. H. L. Kretschmer, Chicago.—p. 491.
Oblique Muscle-Cutting Incision in Acute Appendicitis. J. H. Saint, Santa Barbara, Calif.—p. 504.
Treatment of Trimalleolar Fractures of Ankle. M. C. Nelson and N. K. Jensen, Minneapolis.—p. 509.
Carcinoma of Breast: Report of 418 Cases Treated at St. Luke's Hospital from 1922 to 1933. B. R. Shore, New York.—p. 515.
Omphalocele (Umbilical Eventration) in the Newborn. R. E. Gross and J. B. Blodgett, Boston.—p. 520.
Use of Tourniquet in Removal of Tumors in Posterior Mediastinum. W. D. Andrus, New York.—p. 528.

Malignant Melanomas.—Brown and Byars state that nearly every one has pigmented moles and that not all of them should be or need be removed. The safest procedure is to destroy all moles that are subjected to chronic irritation whether they are pigmented or not. Every lesion that shows evidence of growth, increase in vascularity, change of color, repeated infection or ulceration should be removed, as should be the smooth coal-black nevi. The developmental mole that appears at any time during life and progresses in size is probably the type that most often becomes malignant. The removal of moles should be quick, painless, nonirritating and thorough and should involve minimal handling of the growth. The change from an innocent pigmented nevus to a malignant one should not be difficult to detect and diagnose. Early signs are an increase in elevation or surface area, deepening of pigmentation, increase in vascularity and an apparent chronic infection with slight tenderness. A new localized process in the skin or under the nail presenting an increase in bulk and lacking the pain and tenderness of an infection and the characteristics of a wart should be considered as a malignant neoplasm. Obvious melanin may not be present. Death almost never occurs from extension or erosion of malignant melanomas of the face and head, as may be the case in other malignant conditions of the face. This is probably due to the fact that hopeless metastases and death occur so rapidly. Treatment is limited to surgery, as melanomas are resistant to radiation. The surgical procedure should remove a generous margin of normal surrounding skin and the underlying subcutaneous tissue down to the fascia, and sometimes it may be necessary to sacrifice a facial nerve or the full thickness of the cheek. Melanomas require the earliest possible widespread removal to avoid metastasis; as to the time element in metastasis, one might almost compare hours in melanomas to weeks in other carcinomas following treatment of the local lesion. There are five possibilities: 1. The initial lesion may recur following removal or remain cured. 2. Metastases may occur in the adjacent skin varying from uniformly deeply pigmented velvety areas to stippled smutty patches. This is probably a precursor of widespread metastases. 3. The most hopelessly swift spread is the sudden appearance of skin metastases in many parts of the body, with or without evidence of visceral involvement. 4. The local lesion may remain cured but later, from a few months to twenty-five years, the patient may die of a visceral metastasis. 5. This group contains those cases in which the primary focus is eradicated and the metastasis appears in the regional lymph nodes and is held in check for some indefinite period. Radical block dissection of the neck has shown definite promise and gives the patient his only chance for life. If the primary lesion is located so that its lymph drainage is fairly predictable, a prophylactic dissection should be done. Eleven cases of malignant melanomas are cited. One of the patients has survived for seven, three for four years and the others only up to one and a half years.

Congenital Atresia of Extrahepatic Bile Ducts.—During the last five years Hicken and Crellin encountered five cases of congenital atresia affecting the biliary radicles and have devised an x-ray method to visualize the abnormal biliary tract at the time of operation, thus giving the surgeon a concept of the problem that confronts him. Corrective surgery which establishes a new channel for the flow of bile into the intestinal tract, thus decompressing the liver, offers the only hope of cure. It has been held that these cases were hopeless but recent studies indicate that from 20 to 30 per cent are amenable to surgery. The method of visualizing the ductal deformities at the time of operation employed by the authors is contrast roentgenography as used on adults to obtain exact anatomic patterns of the tract while the patient is on the operating table. These cholangiographic studies proved helpful in visualizing and locating the obstructive lesions affecting the diminutive biliary tract of the infant. The cholangiograms not only facilitated the classification of the obstructions but greatly aided the surgeons in selecting the proper remedial procedure.

Primary and Secondary Neurilemmoma of Bone.—That nerve sheath tumors frequently originate in bone and periosteum is well attested by occasional communications in the literature. There is a form of nerve sheath tumor the specificity of which is assured by a distinctive microscopic appearance and clinical behavior, which unfortunately is referred to by a variety of names (peripheral neurinoma, peripheral neuroma, neurofibroma, perineural fibroblastoma, schwannoma and recently by Stout as a neurilemmoma) indicating a diversity of opinion as to its histogenesis. In spite of an extensive survey of the literature dealing with this condition DeSanto and Burgess found only a

single brief reference by Gross, Bailey and Jacox to the undoubted occurrence of this tumor in bone. Peers described a cystic tumor located in the mid shaft of the ulna that would now be classified as a neurilemmoma. The prevalent concept that once a neurogenic tumor invades bone it is highly malignant and the possibility of cure is practically nil is fallacious and often leads to needless sacrifice of an extremity. The authors report two cases which showed extensive osseous destruction yet were undoubtedly benign. They do not intend to imply that malignant neurogenic sarcomas of bone do not occur. Every case must be decided on its own merits. Mere bone invasion by a neurogenic tumor is by itself inadequate to insure the diagnosis of a malignant tumor. The authors' first case is similar to the cases reported by Gross, Bailey and Jacox and by Peers in anatomic and x-ray appearance. They involved the mid shaft region of the bone, replacing portions of cortex and medullary cavity. The tumor found by Gross and his associates was removed by local excision, whereas DeSanto and Burgess treated the tumor by resecting a portion of the ulna. Finger-like processes of tumor tissue extended into the cortical bone in such a fashion as to leave doubt that simple excision would have proved adequate. Their second case was nonencapsulated and invaded the sacrum, indicating that occasionally the tumor may be locally invasive. Indeed, it even infiltrated the ligamentum flavum. Because of its location, complete removal was not possible and recurrence is anticipated. X-ray examination was done in both cases and cystic lesions with punched out cortical rarefactions were revealed in the first case. Neurilemmoma of bone is not to be confused with the less specific neurofibromas of bone in association with systemic and skeletal manifestations of von Recklinghausen's disease.

Surgery, St. Louis

8:575-738 (Oct.) 1940

*Partial Gastrectomy for Peptic Ulcer: Review of Seventy-Four Operations. R. D. McClure and L. S. Fallis, Detroit.—p. 575.
Transpleural Esophagogastrostomy for Carcinoma of Esophagus and for Carcinoma of Cardiac Portion of Stomach: Report of Two Cases. B. N. Carter, Jean Stevenson and O. A. Abbott, Cincinnati.—p. 587.
Regulation of Circulation in Different Postures. E. Asmussen, E. H. Christensen and M. Nielsen, Copenhagen, Denmark.—p. 604.
Tumor Embolism of Common Femoral Artery, Treated by Embolectomy and Heparin. K.-E. Groth, Uppsala, Sweden.—p. 617.
*Aneurysm of Splenic Artery. L. Sperling, Minneapolis.—p. 633.
*Cavernous Hemangioma of Spleen. F. L. Cole and J. H. Forsee, Washington, D. C.—p. 639.
Further Studies of Hemorrhage and Serum Infusion. F. Neuwelt, S. O. Levinson, W. Olson and H. Necheles, Chicago.—p. 644.
Subdiaphragmatic (Perirenal) Extension of Staphylococcic Empyema. V. A. Weinstein, New York.—p. 648.
Experiments with Tampons and Membranes Made of Collagen. H. Feriz, Amsterdam, Netherlands.—p. 654.
Solitary True Diverticulum of Cecum: Report of Case. J. C. Owings and Z. Morgan, Baltimore.—p. 662.
Congenital Hourglass Bladder. N. F. Ockerblad and H. E. Carlson, Kansas City, Mo.—p. 665.
Viability of Testis Following Complete Severance of Spermatic Cord. H. Neuhof and W. H. Mencher, New York.—p. 672.
Bifurcation Operation. H. Milch, New York.—p. 686.
Apophysial Intervertebral Joints. A. Oppenheimer, Beirut, Syria.—p. 699.

Partial Gastrectomy for Peptic Ulcer.—McClure and Fallis analyze the records of seventy-four consecutive partial gastrectomies performed for peptic ulcer which did not yield to medical treatment. The results justify the continuance of partial gastrectomy which removes from two thirds to three fourths of the stomach. The mortality for the group was 5.3 per cent and all deaths were due to peritonitis. No death has occurred among the last thirty-four patients in the series. The men outnumbered women nine to one. More than one half of the patients had submitted to previous operations on the gastrointestinal tract. Pain, and nausea and vomiting were the most constant symptoms, being present in 85.2 and 70.2 per cent of the patients, respectively. Roentgenograms were the greatest single aid to diagnosis. Among more than 90 per cent of the cases the x-ray observations were corroborated at operation. The ratio of duodenal to gastric ulcer was two to one, whereas the ratio among the authors' perforated ulcer series was three to one. One of the four patients who died did so after early postoperative complications developed; all survived late complications. The end result was excellent or good among 75 per cent of the patients. Carcinoma, suspected neither clinically nor at operation, was diagnosed by the pathologist in five cases. The authors attribute their decrease in the mortality rate to improved operative technic resulting from increased experience and to the adoption of such measures as spinal anesthesia, routine blood transfusions during operation, continuous gastric suction in the postoperative period and oxygen during and immediately after the operation to avoid anoxia and to lessen the occurrence of pulmonary complications.

Aneurysm of Splenic Artery.—Literature contains record of only eleven cases of aneurysm of the splenic artery with survival after operation, according to Sperling, who cites a case in which this condition was considered preoperatively and recovery followed splenectomy and removal of the aneurysm. The pathologic report was that of a calcified arteriosclerotic aneurysm of the splenic artery. The classic x-ray picture described by Lindboe was present, leading to a correct preoperative diagnosis. Seven cases were found in the 33,810 necropsies performed at the University of Minnesota up to January 1939. Less than 100 cases have been recorded since the report of Crisp in 1847.

Cavernous Hemangioma of Spleen.—Cole and Forsee report what they believe to be the first successful outcome of a rupture of a cavernous hemangiomatous spleen, mistakenly diagnosed as acute appendicitis. Emergency splenectomy, performed seventeen hours after the onset of symptoms, proved successful. Hemangioma of the spleen is either a capillary or a cavernous primary vascular tumor. The first consists of a formation of dilated vascular channels in the splenic tissue which gradually become converted into tubules. In the cavernous type the capillary system is lost and the hemangioma consists of a series of freely intercommunicating spaces of varied sizes, lined with endothelium. They are usually considered congenital. Usually the symptoms of benign hemangiomatous spleen are of long duration and are characterized by a gradually increasing tumefaction in the left hypochondrium, associated with pain, loss of weight and anemia. Surgery is the only curative therapy, and splenectomy is necessary. The twenty-two previously reported cases of benign hemangioma of the spleen are tabulated.

Wisconsin Medical Journal, Madison

39:797-896 (Oct.) 1940

Treatment of Upper Respiratory Tract Infections in Children. H. K. Tenney, Madison.—p. 816.
Gangrene in Diabetes. A. H. Beard, Minneapolis.—p. 821.
Lymphogranuloma Venereum: Report of Thirty-Three Cases. A. G. Schutte, Milwaukee, and J. M. Lubitz, Wauwatosa.—p. 823.
Practical Problems of a Physician with a Combined Obstetric and Pediatric Practice. H. A. Sincock, Superior.—p. 827.
Early Diagnosis of Pulmonary Tuberculosis in General Practice. R. H. Stiehm, Madison.—p. 831.

Yale Journal of Biology and Medicine, New Haven

13:1-160 (Oct.) 1940

Studies on Fowl Leukosis: Transfer with Fractions Obtained by Ultracentrifugation of Leukemic Plasma and Bone Marrow Extracts. A. Kirschbaum, K. G. Stern and C. W. Hooker, New Haven, Conn.—p. 1.
Studies on Relation of Kidney to Cardiovascular Disease: II. M. C. Winternitz and R. Katzenstein, New Haven, Conn.—p. 15.
Actions of Colchicine and of Ethylcarbylamine on Tissue Cultures. R. Tennant and A. A. Liebow, New Haven, Conn.—p. 39.
Effect of Colchicine and X-Rays on Transplantable Mammary Carcinoma in Mice. J. W. Hirshfeld, R. Tennant and A. W. Oughterson, New Haven, Conn.—p. 51.
Neutralization of Tumor Viruses by Blood of Normal Fowls of Different Ages. F. Duran-Reynals, New Haven, Conn.—p. 61.
Hemorrhagic Disease Occurring in Chicks Inoculated with Rous and Fuginami Viruses. F. Duran-Reynals, histopathologic findings by R. M. Thomas, New Haven, Conn.—p. 77.
Production of Degenerative Inflammatory or Neoplastic Effects in Newborn Rabbit by Shope Fibroma Virus. F. Duran-Reynals, New Haven, Conn.—p. 99.
N₁Methyl and N₁Dimethyl Substituted Sulfanilamides: Synthesis and Pharmacologic and Therapeutic Properties. R. A. Lewis and M. Tager, New Haven, Conn.—p. 111.
Hydrogen Ion Concentration of Cerebral Cortex in Relation to That of Arterial Blood. C. Marshall and L. F. Nims, New Haven, Conn.—p. 117.
Cardiovascular Effects of Potassium, Calcium, Magnesium and Barium: Experimental Study of Toxicity and Rationale of Use in Therapeutics. A. W. Winkler, H. E. Hoff and P. K. Smith, New Haven, Conn.—p. 123.
Cortical Representation of Taste in Man and Monkey: II. Localization of Cortical Taste Area in Man and Method of Measuring Impairment of Taste in Man. W. S. Börnstein, New Haven, Conn.—p. 133.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

21:161-242 (Aug.) 1940

Simple Culture Medium for General Use Without Meat Extract or Peptone. G. P. Gladstone and P. Fildes.—p. 161.
Experiments on Growth in Vitro of Virus of Yellow Fever. G. M. Findlay and F. O. MacCallum.—p. 173.
Immunization Experiments with Artificial Complexes Formed from Substances Isolated from Antigen of Bacterium Shigae. S. M. Partridge and W. T. J. Morgan.—p. 180.
Relationship of Lesions of Suprarenal Gland to Diphtheritic Toxemia. E. Holmes and H. Lehmann.—p. 196.
Observations on Lymphocytes in Tissue Culture. J. Medawar.—p. 205.
Observations on Lymphocytes in Chambers in Rabbit's Ear. R. H. Ebert, A. G. Sanders and H. W. Florey.—p. 212.
Enzymic Activity of Vaccinial Elementary Bodies. M. G. Macfarlane and D. E. Dolby.—p. 219.
Latent Carcinogenic Action of 3:4-Benzpyrene; Results of Intermittent Applications to Skin of Mice. S. Beck and P. R. Peacock.—p. 227.
Spontaneous Disintegration of Certain Blood Pigments, with Special Reference to Methemalbumin Formation. N. H. Fairley.—p. 231.

British Journal of Ophthalmology, London

24:469-540 (Oct.) 1940

Dystrophies of Macula. A. Sorsby.—p. 469.
Note on Genetic Aspects of Macular Dystrophies. H. Grüneberg.—p. 530.

British Journal of Radiology, London

13:325-356 (Oct.) 1940

Tomography of Spine and Sternum. M. Weinbren.—p. 325.
Double Radium Mold Treatment of Carcinoma of Floor of Mouth and Lower Alveolus. A. G. G. Melville.—p. 337.
Some Geometric Methods of Projecting Dose Contours. C. W. Wilson.—p. 345.
Tuberculosis of Stomach. A. E. Connolly.—p. 351.
Simple Method for Use of Standard Stereoscopic Radiographs in Plane Differentiation. E. D. Gray.—p. 354.
Suprasternal Bones Demonstrated in the Living Subject. H. Morris.—p. 356.

British Medical Journal, London

2:405-436 (Sept. 28) 1940

*Plea for More Local Operation in Really Early Breast Carcinoma. D. C. L. Fitzwilliams.—p. 405.
*Tuberculosis of Knee Joint in Adults. L. A. Key.—p. 408.
Testosterone Propionate in Functional Impotence. A. W. Spence.—p. 411.
March Fracture: Report on Case Involving Both Feet. R. Drummond.—p. 413.
Removal of Teratomatous "Twin." V. Pennell and L. C. Martin.—p. 414.
Benign Cyst of Parotid Gland. M. G. Kini.—p. 415.
Glomus Tumor, with Observations on Variations of Pain with Temperature: Case. J. D. N. Nabarro.—p. 416.

Local Operation for Early Breast Carcinoma.—Fitzwilliams presents data to show that local excision of really early mammary cancer is justifiable. He defines an early carcinoma as one in which there is a faintly perceptible something in the breast—hardly a lump and certainly not a tumor. These tumors have one invariable characteristic: they throw a shadow on strong transillumination. If such a shadow is seen, nine times out of ten the tumors will be carcinomatous. Strong transillumination is the only method of diagnosing them. Of ninety-three patients suitable for the conservative procedure five were lost track of, sixty-two are living and twenty-six are dead. Of the five patients lost track of one went to Argentina the same year, one was lost sight of after eight years and one was known to have kept well for one year and eight months, one for three years and three months and one for nine and a half years. Of the sixty-two living patients forty-seven had no recurrences. The longest survival among these forty-seven patients is fourteen and a half years. Twelve patients have lived longer than ten years and eighteen between five and ten years. Of the fifteen living patients who have recurrences, three have distant but no local manifestations and twelve have local recurrences. The average survival time of these patients has been ten and one half years, varying from two years and eight months to nineteen years. Recurrences appeared locally in an average of two years and nine months. Of the patients who died, twelve did so of intercurrent disease, eleven died of carcinoma but without local recurrence and three died after local recurrence but not necessarily because of it. The survival time of these twenty-six patients ranged from six months to twenty-four years. The average survival was more than six years. The author points out that casual observation of many of the patients would not have disclosed the fact that the breast had been operated on. After operation constant vigilance on the part of the doctor, and the willing cooperation of the patient, are necessary. The author's contention is that local operation in really early cases of mammary cancer can confer the same amount of safety as the more extensive operation.

Tuberculosis of Knee Joint in Adults.—Key discusses the general aspects of the tuberculous knee joint. All but nine of 108 patients treated at St. Luke's Hospital, Lowestoft, from 1931 to 1935 have been followed up recently. Of these patients 37.75 per cent had tuberculous lesions elsewhere. History of trauma, probably bearing some relation to the development of the tuberculous joint, was elicited in 15 per cent of the cases. The average interval from the injury to the onset of symptoms was four and a half months. By the time the diagnosis is made, pathologic changes in a tuberculous knee joint have passed the earlier stages of disease. This was the fact in 87 per cent of seventy-seven cases of recently developed osseous disease, increasing subsequently to 96.1 per cent. Focal osseous disease by itself undergoes three principal changes: 1. The disease remains comparatively localized and reaches quiescence; bone cavities become obliterated or remain circumscribed by well calcified bone. 2. The disease extends laterally and causes abscess formation in the soft tissues. 3. The diseased area extends downward. This is the most common occurrence, and once the joint becomes grossly infected the later destructive changes progress until quiescence is eventually established. In repair fibrosis is the predominant factor. Pain is the first symptom in 70 per cent of cases. Swelling of the joint with pain or stiffness is present in 54 per cent of patients when medical advice is first sought. In a further 22 per cent the initial abnormality noticed by the patient was a swelling of the knee. Limitation of movement is gross and is accompanied by spasm when the joint surfaces are eroded. Tenderness, when present, is most often elicited on the inner side of the joint. Local warmth is always present. Abscess formation in the early stage of the disease occurs in 6.5 per cent. X-ray changes in the early tuberculous knee joint are usually inconclusive. One or more of the following abnormalities are usually seen: (1) general haziness, (2) increased width of the soft tissue shadow, (3) osteoporosis, (4) diminished joint space and (5) lack of definition or thinning of the cortical bone. After an average interval of four months from the onset of symptoms an abscess cavity or cavities are usually present in bone; localized marginal erosion may also be seen. Destructive osseous changes are more advanced than they appear on x-ray examination. Early diagnosis is difficult. It is justifiable to treat an obscure case of subacute arthritis as potentially tuberculous until proved otherwise. The insidious onset of joint symptoms is important, as is their spontaneous alleviation, which is never complete. The patient's general physical condition is an untrustworthy guide, as in 87 per cent it is good or only slightly deteriorated. Bacteriologic examination of pus from an abscess is the most valuable laboratory aid. Biopsy of the synovial membrane is inadvisable. In adults, tuberculosis of the knee joint may be confused with subacute chronic infective or gonorrheal arthritis, syphilis, hemophilia, traumatic lesions and neoplasms. Conservative treatment is indicated when the disease is purely synovial, when the bone focus or foci are removed from the articular margin and are surrounded by healthy bone, in quiescent cases with widespread osseous involvement and when other active tuberculous lesions exist. Conservative treatment appeared to suffice for only thirty cases. Thirty-one of the 108 patients returned to the hospital, indicating that free movement or bony ankylosis should always be sought. Arthrodesis, after arrest of the general illness and local disease, is the best treatment for most cases. Active septic infection of sinuses and persistently active local disease are its chief contraindications. Bony union was obtained in 83 per cent of fifty-nine cases. The five cases in which firm fibrous ankylosis resulted have remained functionally excellent, but the result must be regarded as having fallen short of the objective.

Two incomplete fibrous unions and three nonunions (two of which subsequently required amputation) were chiefly due to operating when the disease was active. Three of the ten patients having amputations died within a few days of operation, three survived operation and left the hospital but have died at varying intervals since, and four patients are well. Amputation is a last resort, but the tendency is to delay it too long. A patient suffering from profound toxemia has often passed the stage when amputation could have saved his life. Widespread disease may exist with remarkably little constitutional disturbance and amputation should not be performed until prolonged conservative treatment has failed to give any sign of recovery.

Edinburgh Medical Journal

47:585-644 (Sept.) 1940

Edinburgh Medical School a Hundred Years Ago. R. Thin.—p. 585.
Modern Therapy in Specific Infections. R. C. L. Batchelor.—p. 601.
Acute Leukemia: Clinical and Hematologic Study. A. Piney.—p. 616.
*Carcinoma of Stomach in Young Subjects. J. G. Macleod and R. B. Baird.—p. 627.

Carcinoma of Stomach in Young Subjects.—Macleod and Baird state that ten cases of gastric carcinoma in persons 30 or less years of age occurred among 700 cases of carcinoma of the stomach treated since 1934 at the Royal Infirmary, Edinburgh. Some of the observations in these cases differ from those reported by other workers. Six of the ten cases occurred in women, in contrast to Bruckner's report that men were affected twice as often as women. Microscopic confirmation was obtained in six cases, and the tumors in four were adenocarcinomatous, one scirrhous and one medullary. The pyloric antrum of eight was involved, the lesser curvature of one and the whole of the stomach of one. No particular disease, certainly not peptic ulcer, was simulated, and the characteristic course (in seven cases) commenced with a period of vague dyspepsia in which abdominal pain was a common feature. All this is contrary to the observations of Bruckner. Vomiting was present in nine cases; it tended to occur later and to be of an obstructive type. Pyrexia was uncommon, being persistent in only one case. A mass, far from being infrequent, was palpable in seven cases. This is in keeping with the observations of Phillips in that in those cases in which the tumor was measurable it was greater than 6 cm. in diameter at operation of 73.6 per cent of the patients. In keeping with Bruckner's observations the average duration of symptoms prior to admission was fifteen and one half weeks and from onset of symptoms to death sixteen and one half weeks. Local metastases were present in nine of the ten cases, and metastases were widely disseminated in three of the six cases examined post mortem. The outcome was uniformly fatal. In Phillips's series metastases had already involved the lymph nodes in two thirds of the cases and other metastases were found in an unusual variety of sites. The authors emphasize the short course, the extensive metastases and the hopeless prognosis and point out that the condition, while uncommon, is not as rare as is usually thought and therefore the ruling out of gastric cancer because of the youth of a patient suffering from an anomalous type of dyspepsia must be avoided. In such cases the routine use of the flexible gastroscope may aid a diagnosis to be made sufficiently early so that radical but probably beneficial surgery may be carried out.

Glasgow Medical Journal

16:63-114 (Sept.) 1940

Carcinoma of Bronchus: Investigation into Incidence and Pathologic Features of 131 Cases from Glasgow Royal Infirmary. J. C. Dick.—p. 63.

Indian Medical Gazette, Calcutta

75:449-512 (Aug.) 1940

Subtotal Gastrectomy with Ulcer Exclusion in Treatment of Chronic Peptic Ulcer. F. A. B. Sheppard.—p. 449.
Report of Pneumonia Enquiry at the Mayo Hospital, Lahore, During the Years 1938, 1939 and 1940. G. F. Taylor and N. L. Chitkara.—p. 456.
New Method for Relief of Paralysis of Opponens Pollicis. M. Scheck.—p. 464.
Automatic Flyproof Latrine Seat. B. S. Dhondy.—p. 466.
Intradermal Test as Index of Vitamin C Nutrition: Part II. S. Banerjee, B. C. Buha and K. C. Basak.—p. 468.
Observations on Outbreak of Epidemic Cerebrospinal Meningitis in Burma, with Special Note on Its Bacteriology and on Progress of the Epidemic. G. C. Maitra and P. N. Sen Gupta.—p. 473.

Lancet, London

2:381-410 (Sept. 28) 1940

*Chronic Jejuno-Ileal Insufficiency: Pathogenesis of Celiac Disease, Tropical Sprue and Other Conditions. T. I. Bennett and C. Hardwick.—p. 381.
Potassium and Phosphate Content of Plasma from Stored Blood. B. R. S. Mainwaring, F. X. Aylward and J. F. Wilkinson.—p. 385.
Local Inunction of Testosterone in Chronic Mastitis. A. W. Spence.—p. 387.
Visceral Pain Produced by Balloon Distention of Jejunum. F. H. Bentley and R. H. Smithwick.—p. 389.
Antiseptic Analgesic Tannic Acid Jelly for Burns. J. F. Heggie and R. M. Heggie.—p. 391.

Chronic Jejuno-Ileal Insufficiency.—Bennett and Hardwick direct attention to the fact that the last twenty years have seen the increasing recognition of a clinical syndrome of steatorrhea, tetany and macrocytic anemia. The names of Gee, Herter, Heubner and Thaysen have been attached to it; celiac disease and tropical sprue fall within its definition. There is a tendency to class together as nontropical sprue all such cases not coming from the tropics. The syndrome is also found in some cases of malignant or of cicatrizing disease of the small intestine, in some cases of gastrocolic fistula and in some cases of tabes mesenterica. Rickets and deformed bones are common when the syndrome affects children. The anemia is hypochromic or erythroblastic; stomatitis and sore tongue are common; skin lesions, including some resembling those of pellagra, have been described. The fatty diarrhea is notable in that the fat is fully split, and the stools may be bulky and pale but not frequent. In other cases the stools are frequent and gassy; megacolon, perhaps compensatory, is pronounced in some cases. When the syndrome begins in childhood there is stunting of growth, often accompanied by infantilism. When it begins during adult life it is usually accompanied by sterility. Blood calcium and blood phosphorus are often low. In spite of the attempts to recognize in this syndrome a single entity, it seems clear that two diseases in no way related to each other, celiac disease and tropical sprue, are responsible for the vast majority of examples. The following points are important in differentiating between these two conditions: Celiac disease essentially affects little children. Tropical sprue is essentially a disease of adult life. Celiac disease produces meteorism, but in its later stages the stools tend to be pale and bulky rather than frequent; stomatitis and sore tongue are rare; megacolon is common in the older patients. In sprue the feces tend to be more fluid, and the diarrhea responds more rapidly and completely to treatment. Sore tongue and stomatitis are the rule; megacolon seldom if ever develops. Tetany is common in both conditions, but rickets and deformed bones are found in celiac disease alone. The anemia of celiac disease is usually hypochromic. In tropical sprue, macrocytic anemia is common. Established celiac disease is fatal to 40 per cent of the patients during the first two years, and of those who survive the early stages not more than 25 per cent reach the third decade. Tropical sprue, properly treated, gives an extremely good prognosis. Even in the present incomplete state of knowledge it is important to recognize that in every example of this syndrome the clinical picture is due to the same cause; that is, chronic jejuno-ileal insufficiency, with consequent defects of secretion and absorption. The final proof of this is provided by cases in which the small intestine is deprived of its functions by surgical short-circuiting.

Medical Journal of Australia, Sydney

2:229-252 (Sept. 14) 1940

Investigation into Incidence of Pulmonary Tuberculosis in Young Women of Adelaide in the Age Group 15 to 30 Years. H. W. Wunderly.—p. 229.
Study of Tuberculous Cavity of Lung. R. Le P. Muecke.—p. 232.
Tuberculosis as a Problem for the State. C. Harvey.—p. 239.

Tubercle, London

21:281-312 (June) 1940

Topography of Relative Distribution of Cancer and Tuberculosis. D. B. Cruickshank.—p. 281.
Developmental Cystic Lung in an Infant: Case. F. G. Chandler, S. R. Gloyne and D. V. Hubble.—p. 292.

Schweizerische medizinische Wochenschrift, Basel

70:801-824 (Aug. 24) 1940

Transition Forms of Blood Groups. L. Hirszfeld and Amzel.—p. 801.
*Treatment of Epidemic Poliomyelitis with Potassium Chlorate. O. Gsell.—p. 803.
Clinical Observations in Case of Beriberi in Switzerland. C. Maier.—p. 807.
Cystic Dilatation of Ostium in Case of Blind Proximal End of Ureter and in Case of Severe Hypoplasia of Homolateral Kidney. J. Wyler.—p. 809.
Acute Glaucomatous Cataract Designated as Glaucoma Spots. E. Sommer.—p. 813.
Arteriosclerosis and Alimentation. J. A. Collazo.—p. 816.
Use of Mercurial Derivatives for Wounds. E. J. Donzallaz.—p. 816.
Head Injuries During War. T. Naegeli.—p. 817.

Treatment of Epidemic Poliomyelitis with Potassium Chlorate.—Gsell calls attention to the administration of fractionated doses of potassium chlorate in the treatment of poliomyelitis, a method recommended by Contat (*Schweiz. med. Wchnschr.* **68**:669 [June 4] 1938; abst. The Journal July 23, 1938, p. 363). An epidemic of poliomyelitis during 1939, in the course of which 119 cases were observed at Gsell's clinic, gave him an opportunity to ascertain the efficacy of Contat's therapy. Gsell employed potassium chlorate in ninety-seven cases. He presents a number of clinical histories which provide answers to the essential questions that arise in connection with every form of treatment recommended for poliomyelitis. He observed that potassium chlorate exerts no influence on the severest form of poliomyelitis with ascending paralysis. The temperature remains high, the paralysis advances and death takes place. The question whether early potassium chlorate therapy is capable of arresting the process in the preparalytic stage and thus prevent paralysis is likewise answered in the negative. Early potassium chlorate treatment failed to prevent the development of serous meningitis in nonparalytic cases. The fever remained high in spite of the administration of potassium chlorate. Comparing the cases treated with potassium chlorate with cases observed in previous epidemics in which Contat's method was not employed, the author found that the percentage of nonparalytic forms was practically the same. The mortality rate was 6 per cent in the cases treated with potassium chlorate and 1.5 per cent in the other cases. The percentages of complete cure and of crippling defects were about the same whether potassium chlorate was given or not. The author thinks that the higher mortality rate in the cases treated with potassium chlorate is not the result of the treatment but that it indicates that this therapy has no effect on the course of poliomyelitis.

Archivio per le Scienze Mediche, Turin

69:489-576 (June) 1940. **Partial Index**

*Regulation of Hemopoiesis in Pathogenesis of Pernicious Anemia: Action of Liver Extract on Basal Metabolism in Pernicious Anemia. G. Boccuzzi and W. Paolino.—p. 489.
Aminopyrine and Diuresis. C. Franzolin.—p. 511.

Pernicious Anemia.—Boccuzzi and Paolino studied the behavior of basal metabolism in twenty cases of pernicious anemia. The basal metabolism was increased in thirteen and diminished in one case before the employment of liver therapy. It displayed a tendency to become normal after ten or more days of liver therapy. Nine patients were given an intragluteal injection of 4 cc. of liver extract before liver therapy and again in the course of treatment. The consumption of oxygen for the first four hours following the injection progressively increased when the basal metabolism was normal, diminished and then increased when there was basal hypermetabolism and varied slightly in the presence of hypometabolism. Because of the influence of liver extract on pernicious anemia and the frequency of basal metabolic disorders on the one hand and the relationship between the thyroid, hemopoiesis and basal metabolism on the other, the author associated thyroid disorders with the pathogenesis of pernicious anemia. He presupposes the existence of two hemopoietic antipernicious factors, Castle's factor and a hepatothyroid factor. Both factors are stored in the liver and are essential to normal hemopoiesis. The insufficiency of both factors, or the insufficiency of one in the absence of the other, is the cause of a disturbance in the regulation of hemopoiesis with consequent pernicious anemia. A predominant insufficiency or absence of the Castle factor stimulates overproduction of the hepatothyroid factor with a partial or total reaction on the part of the thyroid. If the reaction is partial, the basal metabolism is normal in the presence of pernicious anemia. If it is total, there is basal hypermetabolism. A predominant insufficiency of the hepatothyroid factor indicates functional or structural insufficiency of the thyroid associated with basal hypometabolism. The tendency of the basal metabolism to return to normal on liver therapy suggests utilization of the antipernicious factors contained in the liver extract and the reestablishment of the hemopoietic function of the organic antipernicious factors. The Castle factor is not related to the consumption of oxygen by the body immediately on administration of liver. The hepatothyroid factor exerts an indirect effect on the consumption of oxygen through the thyroid. The different curves of oxygen consumption immediately after an injection of liver extract indicate a more or less rapid utilization of the antipernicious factors by the body. A constantly increasing curve of oxygen consumption in the presence of normal basal metabolism indicates a moderate insufficiency of the Castle factor, a partial thyroid reaction and immediate utilization of both antipernicious factors. An early downward curve of oxygen consumption followed by a late upward curve in the presence of basal hypermetabolism indicates acute predominant insufficiency of the Castle factor, a total thyroid reaction, early utilization of the Castle factor and late action of the hepatothyroid factor. A slow progressive upward curve of oxygen consumption in the presence of basal hypometabolism indicates a moderate insufficiency of the hepatothyroid factor from functional thyroid insufficiency and an immediate, although slow, organic utilization of the hepatothyroid factor. Slight variations in the curve of oxygen consumption in the presence of basal hypometabolism indicate insufficiency of the hepatothyroid factor due to structural insufficiency of the thyroid.

Athena, Rome

9:225-256 (Aug.) 1940. **Partial Index**

Sulfanilamide in Therapy of Infections of the Eyes. D. Cattaneo.—p. 231.
*Toxicity of Sulfanilamide for Liver. G. De Bonis.—p. 248.

Toxicity of Sulfanilamide for Liver.—De Bonis observed symptoms of liver intoxication develop in the course of the first week of sulfanilamide therapy in two cases. Gonorrhea in one case and diplococcic tonsillitis in the other were mild and were in a stage of regression when the treatment was instituted. The patients had never complained of liver disorder. The daily dose of the drug was 1.8 Gm. The patients complained three or four days after the beginning of the treatment of nausea, digestive disturbances, headache and a dull pain in the region of the liver. These symptoms were followed from two to three days later by jaundice, urobilinuria and enlargement of the liver. The blood was normal. The drug was discontinued and a proper diet and treatment instituted. The symptoms, however, became more acute, fever developed, lasted one day, abated after spontaneous sudation and was followed by urticaria in one case and by a cutaneous rash in the other. The condition was controlled in two weeks by diet and by appropriate treatment, intravenous dextrose, calcium and liver therapy. The author studied the effect of sulfanilamide on the liver in eleven normal persons who received a daily dose of 0.03 Gm. for each kilogram of body weight for ten consecutive days. Liver function before and after administration of sulfanilamide was determined by the aminoacetic acid and dextrose tolerance tests. Disturbance of liver function was demonstrated in five cases. The author concludes that sulfanilamide has a toxic effect on the liver in a large percentage of cases. It is therefore suggested that particular attention be paid to hygiene and diet before and during administration of the treatment, the dose and duration of which are to be directed by the physician. It is likewise advisable to watch liver function in the course of the treatment, especially in cases in which there is a previous history of liver disorder.

Minerva Medica, Turin

1:545-576 (June 30) 1940. **Partial Index**

*Strophanthus in Heart Disease. S. G. Jucker.—p. 545.
Roentgenograms of Venereal Lymphogranulomatosis in Anus, Rectum and Colon. M. Buisson and A. Midana.—p. 550.

Strophanthus in Heart Disease.—Jucker administered strophanthus intravenously in seventy-five cases of decompensated heart of various types, such as those due to valvular disease from rheumatic endocarditis, to myocardial sclerosis or to syphilitic chronic aortitis with an anginal syndrome and to failing of the pulmonary circulation due to sclerosis of the pulmonary artery and acute insufficiency of the heart. The treatment was resorted to after failure of digitalis or in cases of intolerance to digitalis. The initial dose amounted to 0.0001 or 0.0002 Gm. of the drug. The total daily dose did not exceed 0.00025 Gm. in disturbances of the coronary circulation, acute heart insufficiency or grave myocardial alterations complicating infections, and it was 0.0005 Gm. in cases without these disturbances and with hypertrophied heart. The drug was administered every other day or at longer intervals, and the total number of doses varied from four to ten. The treatment was repeated in some cases on reappearance of the symptoms of decompensation three or more months after the first treatment. It was well tolerated in all cases. Circulation and the general condition of the patients improved. Oxygenation of venous blood in valvular disease or of arterial blood in sclerosis of the pulmonary artery improved. Diuresis increased and edema was controlled. Dyspnea and cyanosis were controlled or greatly improved. The anginal syndrome in chronic syphilitic aortitis was controlled. The electrocardiogram became normal in cases of valvular disease. It improved in some cases of myocardial disease and did not change in syphilitic aortitis. The treatment is harmless, provided it is given in a proper dose and according to proper indications. Certain types of heart insufficiency are associated with cardiac hypersensitivity to strophanthus. The individual sensitivity is determined by the reaction of the patient to small doses of 0.0001 or 0.0002 Gm. of the drug. The author considers acute insufficiency of the heart as an absolute indication for strophanthus therapy. The presence of moderate renal disease or of complicating myocardial sclerosis does not contraindicate the treatment. Addition of dextrose, caffeine or ethylenediamine does not modify the pharmacologic properties of the drug.

Boletín de la Asociación Médica de Puerto Rico

32:313-352 (Sept.) 1940. **Partial Index**

Adenoma of Kidney: Case. P. G. Curbelo.—p. 313.
*Nutritional Edema. A. Ortiz.—p. 319.

Nutritional Edema.—Ortiz emphasizes the role of lack of proteins and vitamins A and B_2 in the diet in the development of nutritional edema frequently seen in Puerto Rican infants and children. Twenty-seven children with nutritional edema observed by the author were anemic and undernourished and they complained of general debility. Five patients in the group vomited, twenty-five had chronic diarrhea, and several suffered from pellagra, celiac disease, intestinal parasites, infectious fever, chronic bronchitis and multiple infections. One had pulmonary tuberculosis. The treatment consisted of a diet rich in proteins and of administration of vitamins A and B_2 and, in grave cases, of liver extract, iron and blood transfusion. The proteins in the blood plasma were determined before and after the treatment in nine cases, in all of which, except those complicated by renal disease, the total proteins and albumins in the blood were increased coincidentally with the control of edema by diet and treatment. In cases of nephritis or nephrosis the treatment controlled edema but the blood proteins did not increase. A differential diagnosis between nutritional edema and renal disease is important because restriction of proteins, which is indicated in the latter, aggravates the former. Patients with early nutritional edema react promptly and favorably to the treatment and diet. The diet must be supervised when the patient returns to his home because of poverty and lack of understanding of the causes of the condition. The lack of a proper diet results in reestablishment of edema. Two necropsies revealed anatomopathologic evidence of lack of vitamin A and of the occurrence of multiple infection.

Revista Medica de Rosario, Rosario de Santa Fe

30:807-900 (Aug.) 1940. **Partial Index**

Femininity Causing Effects of Adrenal Tumors in Men. O. Pico Estrada.—p. 807.
*Relationship Between Chronic Mastitis and Cancer of Female Breast. S. Warren.—p. 829.

Chronic Mastitis and Cancer of Female Breast.—Warren studied 1,044 women who had chronic mastitis and in whom a portion of the involved breast was removed and was subjected to microscopic study. The group included cases of chronic simple and cystic mastitis, Schimmelbush's disease, Semb's cystic fibro-adenomatosis, Cheatle and Cutler's hyperplasia, Aschoff's cystic mastopathy and Reclus's disease. The patients were observed for an average period of nine years after the operation. Cancer of the involved breast did not exist in any case at the time the operation was performed. It developed in thirty-five cases some time after the operation. The author found that the incidence of cancer of the breast was six times as great in women who have had chronic simple or cystic mastitis as in those who did not have this condition. It was greater in women above the age of 30 and before the menopause than in those at the menopause or after. There exists a relationship between chronic mastitis and the development of cancer, although either condition may develop in the absence of the other. The treatment of chronic simple or cystic mastitis consists in excision of the involved portion of the breast. The patients should be observed for a long period after the operation. The appearance of nodules or cysts in the remaining portion of the breast is an indication for a unilateral mammectomy. A bilateral mammectomy is not justified as a preventive measure in cases of chronic simple or cystic mastitis.

Zeitschrift für Urologie, Leipzig

34:129-192 (No. 4) 1940. **Partial Index**

*Prostatectomy or Resection of Prostate? O. Kneise.—p. 129.
Abrodil Pool According to Kneise-Schober and Its Significance for Diagnosis of Hypertrophy of Prostate. K. L. Schober.—p. 139.
*Technic and Interpretation of Acid-Alkali Alteration Test According to E. Rehn. H. Schneider.—p. 148.
*Failure of Indigo Carmine Test and Significance of Acid-Alkali Alteration Test According to E. Rehn for Diagnosis of Renal Tuberculosis. Annemarie Schneider.—p. 157.
Renal Injuries. P. Deuticke.—p. 165.
Cleansing, Sterilization, Drying, Hardening and Storage of Ureteral Catheters. W. Wicher.—p. 173.

Prostatectomy or Resection of Prostate?—Kneise cites a number of recent publications on the question of enucleation versus electroresection of prostatic hypertrophy. He considers the enthusiasm for the transurethral electrocoagulation and electrotomy as premature. In an earlier evaluation he had expressed the opinion that electrocoagulation is excellent for the soft tumors but that in hypertrophy of the prostate the method will not produce such wonderful results, for, he is convinced, the extremely favorable results reported by some are due to the fact that electrotomy was employed in cases which would have responded to catheterization. He cites authors who greatly restrict the indications for electroresection and quotes statistics from Rehn's clinic in Freiburg which reveal that the percentage of patients subjected to electrocoagulation has steadily declined in recent years. On the basis of thirty years of experience he himself favors a two stage prostatectomy. With this method he has been able to save patients who at first seemed unsuited for the operation. However, some times he has waited as long as six or nine months to give the kidneys time to recover sufficiently, so that the intervention could be made without danger. He admits that prominent surgeons state that from 25 to 30 per cent of their patients cannot be rendered suitable for operation and that for these they wish to employ electroresection, but he thinks that this is due to the fact that they do not evaluate properly the temporary vesical fistula. He stresses the advantages of the vesical fistula and describes his method of effecting the gradual closure of such a fistula. He believes Kraas justified in stating that it is not advisable to treat all forms of prostatic adenoma with the same method, and that the possibility of individualizing the treatment signifies progress of prostatic surgery. Large adenomas of the prostate should be radically removed by prostatectomy, provided the case is suitable for operation.

Rehn's Acid-Alkali Alteration Test. — According to Schneider the acid-alkali alteration test was first described by Rehn and Günzburg in 1923. Since then it has been employed in about 4,000 cases at the surgical clinic in Freiburg. Rehn's acid-alkali alteration test examines the capacity of the kidney to eliminate acid and alkali and to reabsorb the necessary alkali. The acid elimination is tested in the morning with the patient fasting. One hour before the examination the patient is given 300 cc. of water and twenty-five drops of diluted hydrochloric acid. A rack with two sets of test tubes (one set for the urine from each kidney) is prepared. Cystoscopy is done and ureteral catheters are introduced. The p_H value is determined with five drops of urine from each kidney. Then follows the alkali tolerance test, 50 cc. of a 4 per cent solution of sodium bicarbonate being injected intravenously. Three minutes later and at intervals of three minutes (until twelve minutes has elapsed), urine is obtained from both kidneys and the p_H of the specimens is determined. It is absolutely necessary that only those specimens be compared which were excreted simultaneously by the two kidneys. The kidneys of a healthy subject excrete at the same time urine of an identical reaction, but even slight differences are pathologic. Thus in the evaluation of the curve obtained by the acid-alkali alteration test the absolute p_H values are less important than the functional latitude (the change after the alkali tolerance test) and especially the comparative values of the two kidneys. The author believes that the determination of the p_H values is the chief reason why the method has failed to obtain the wide application it deserves. Rehn's modification of the indicator method of Michaelis is the best for practical purposes. In case of extensive glomerular impairment the acid-alkali alteration test discloses a persistent acidity (acid rigidity). The impaired glomeruli are throttled. The flooding of the blood with an alkali produces no change, because a better elimination is impossible. The urine remains acid. In case of slight glomerular damage the acid rigidity is relative; the curve of the diseased kidney remains below that of the healthy one. In case of tubular lesions, although the glomeruli eliminate the acid and alkali the diseased tubules fail to reabsorb alkali and already the initial value of the diseased kidney is at the neutral point or in the alkaline sphere, and after the alkali tolerance test the alkali values become extremely high. If glomeruli and tubules are impaired, the reaction of the renal urine is from the beginning near the neutral point or in the alkaline region. The acid-alkali test is extremely sensitive. It has proved especially valuable in the diagnosis of renal tuberculosis, disclosing disorders not detectable by other tests.

Acid-Alkali Alteration Test in Renal Tuberculosis.—The diagnosis of renal tuberculosis is generally based on the presence of renal pyuria, disordered renal function and tubercle bacilli in the renal urine. Tubercle bacilli cannot always be demonstrated in the presence of renal tuberculosis. In such cases the diagnosis is made on the basis of functional kidney tests combined with evidence of destruction in retrograde pyelograms. At Rehn's clinic, according to Schneider, the diagnosis is never based on the pyelogram alone or on the functional tests alone, for neither alone permits of a reliable diagnosis. If both are positive, renal tuberculosis can be recognized even if no bacilli can be demonstrated. Extreme caution is necessary in the interpretation of roentgenograms, because there exist nontuberculous inflammatory lesions in which the changes in the papillae may resemble those of an incipient renal tuberculosis. Differentiation is possible because renal tuberculosis is always accompanied by permanent disturbances in the renal function, whereas the nontuberculous papillitis may heal and the function may become normal. Since functional tests are of decisive importance in the diagnosis of renal tuberculosis, their reliability was investigated and it was found that the indigo carmine test often simulates a normal function when the acid-alkali alteration test of Rehn discloses a functional impairment. The more reliable acid-alkaline alteration test has not found the wide application it deserves, because the impression prevails that it is too complicated. The author feels that this impression is not justified. She presents a number of case histories which demonstrate that Rehn's acid-alkali alteration test is definitely superior to the indigo carmine test, for whereas the indigo carmine test simulated a normal renal function, the acid-alkali alteration test disclosed a functional disturbance of the diseased kidney.

Nordisk Medicin, Gothenburg

7:1269-1302 (July 27) 1940

Hospitalstidende

*Bone Destruction in Cancer of Cervix of Uterus by Direct Propagation, by Lymphogenic and by Hematogenic Metastasis. F. Nørgaard.—p. 1271.

Bone Destruction in Cancer of Cervix.—Nørgaard says that x-ray examination of the skeletal system, especially of the lumbar spine and the pelvis, in patients with cancer of the neck of the uterus treated at the Radium Station in Copenhagen shows that the changes consist almost exclusively in osseous destruction, in a few cases with sclerosis. Since propagation or recurrence of the cancer almost always occurs in only two ways, either to the parametrium or to the lymph glands along the vasa iliaca and the abdominal aorta, there are two well defined main groups of osseous changes. When there is metastasis to the parametrium the earliest changes appear in the iliopectineal line and consist of a flat irregular gnawing off a few centimeters in extent, usually localized to the posterior half, occasionally with sclerosis. In more advanced cases the iliopectineal line is frayed or gnawed off, with larger or smaller clarifications, often sharply defined, from the sacro-iliac articulation to the pectineal line and upward on the inner side of the ala of the ilium. Every small clarification in the iliopectineal line must be suspected as possibly the earliest faint sign of destruction. In the second main group, with metastasis to the regional lymph glands, the tumor tissue may invade the adjacent bones; in the ala of the sacrum and parts of the ilium bordering on the sacro-iliac articulation clarifications appear, and in the lumbar vertebrae, most often the fourth and third, destruction occurs in the lateral surfaces of the bodies, usually unilaterally. There may be extensive destruction in several vertebrae. Hematogenic metastases to bone are rare. The author has seen five cases in fourteen years, two of which were localized to the femur, two to the tibia and one to the tarsus. In one of the cases roentgen irradiation resulted in recovery; the patient has been without symptoms for over four years. He cautions that the osseous changes described must not be confused with changes in the neck of the femur resulting from roentgen irradiation and causing spontaneous fractures and pseudarthroses.

Norsk Magasin for Lægevidenskapen

*Traumatic Pulsating Exophthalmos and Its Treatment. E. Schie.—p. 1275.
*Neuro-Anatomic Examination of Brain After Ligature of Carotid Artery in Case of Pulsating Exophthalmos. J. Cammermeyer.—p. 1283.
Fracture of Spinal Column After Metrazol Shock Treatment of Psychoses. A. Vogt.—p. 1289.

Traumatic Pulsating Exophthalmos and Its Treatment.—In the first of Schie's patients, a man aged 36, the symptoms disappeared for a week after ligation of the right internal carotid artery on the same side as the aneurysm. They again disappeared after ligation of the left internal carotid and the patient felt well for four days. An apoplectiform hemiplegia of the right side then occurred, with fatal outcome. In the second patient, a woman aged 41, ligation of the internal carotid on the same side as the aneurysm was done. While normal eyesight was not restored, the other symptoms disappeared and she is able to work. The third case is one of untreated pulsating exophthalmos of six years' standing.

Neuro-Anatomic Examination of Brain after Ligation of Carotid Artery.—Cammermeyer's examination in the first of Schie's cases of pulsating exophthalmos showed a considerable degenerative process in the left hemisphere, limited to the cortex within the motor area and the adjacent convolutions. The cellular changes were of the "severe" (Nissl) and the "homogenized" (Spielmeyer) types. The glia cells in part showed regressive changes with pyknosis and karyorrhexis, in part milder "progressive nuclear changes." The author concludes that following the ligature of the carotid on the left side a considerable necrosis of the cortex, ascribed to a probable embolic process, occurred corresponding to the end branchings of the middle cerebral artery. In the intensity and nature of the changes and their limitations the case resembles the cases examined by Müller and Döring, but it differs from them in that the pathologic changes are cortical without involvement of the white substance or the basal ganglions. The onset of symptoms an interval after the operation also suggests an embolic pathogenesis.

THE STUDENT SECTION

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DaCosta—Man and Genius

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PHILADELPHIA

Every so often a truly great soul or character is born, one who is extraordinary and grand and whose mental ability shines out with the seeming brilliance of the noonday sun, rendering all around refulgent with its scintillating rays. Occasional fleeting shadows may dim the rays and give a hasty glimpse of those characteristics, showing that genius is just human and that such a giant is, after all, akin to us poor ordinary mortals. Occasionally too one may be privileged to tread the pathway carved by such a genius or at times walk beside him and see and attempt to analyze some of those characteristics.

For only a short time was I privileged to stand near such a genius and to observe him for a few fleeting moments, but those fleeting moments have made a lasting impression—a bright ray—a beacon outshining the light of other knowledge that has come to me. I refer to that genius of pen and scalpel, that master of oratory, that omnivorous reader, that great philosopher, that almost matchless mind and yet very human J. Chalmers DaCosta. A definite and unswerving teacher who hated an ice bag in appendicitis with the same vehemence that he hated lawyers who browbeat the physician on the witness stand, to whom a fire or a fireman meant more than a fat fee and to whom the gratitude of a ward patient meant a greater personal satisfaction and recompense than the dollars of the wealthy. A man whose force of knowledge, will power and deft fingers stalked, time and time again, the grim specter and won on that twin field of tragedy and pathology called the operating room.

His book on surgery, true to his teachings, was and still is a revelation and a masterpiece. The usual dry preface was replaced by an entertaining essay, varied in each edition and showing the diversified knowledge of the author in arts and sciences as well as an understanding of what would appeal to all classes of readers.

TRIALS AND TRIUMPHS OF THE SURGEON

Stories always crop up about such an individual—some true, some spurious—but each serves to emphasize the personal element. They never detract; they serve to delineate and cause him to stand out in bold relief both among his contemporaries and in the times and greatly accentuate the God-given genius in his mortal habitation. No better illustration can be used in the opening pages of this character sketch than some of the remarkable figures of speech, comparisons and descriptions used in one of his speeches, notably Trials and Triumphs of the Surgeon: "When a surgeon is too old to be of much value they make him a consultant, but when a lawyer is ready for the shelf he is placed in the Supreme Court. When I see his honor, the judge, on the bench, with his arcus senilis, tortuous temporal arteries and other signs of degeneration, I think of the fly in the amber; I see him, I know he is there, but how did he ever get there?" To quote further: "It is vastly to the credit of the medical profession that so few leave it to go into quackery; . . . if a regular chooses to apostasize and then turn quack he can often make money rapidly and in quantity, but few are willing to become pariahs. The old training has left its mark. Certain beliefs are fixed so firmly that they become as intuitions. A man may leave the army of healing but he seldom joins the enemy. . . . Failure, disappointment, disenchantment, embitterment, neglect, even actual want very seldom cause a physician to become a quack and thus cease to be a man who stands above the common herd." "Of all the causes of failure I doubt if any is more potent than vanity. The proper attitude towards all scientific questions is one of humility. When one can no longer wonder at nature, he can no longer progress. When he would settle everything by a formula, he is consigned forever to the compartment of useless odds and ends." "Vanity tires out even the most patient colleague, gives a weapon to every opponent, and potential friends quickly weary of the society of the discoverer of everything that is useful and important. Such men obey the command to let their light shine before men, and it shines so strongly and persistently that it resembles a conflagration in a shop of fireworks.

It may be added that those about find their nostrils assailed with noisome odors and their ears bombarded with sounds of destruction. Were the walls which bar the way to success like the walls of Jericho, they might be expected to fall from noise, but they do not do so. The man who does the bombarding is of small caliber in spite of being a big bore. Every now and then we see such a man purchase a two-cent stamp as though he were laying the corner-stone of a cathedral. Such a vanity makes one suspicious, critical, resentful, ungrateful and bombastic. The athletic exercise of throwing bouquets at oneself never strengthens the muscles of the mind. When it is practiced for a long time, a man sets as exaggerated an estimate on his own value as though he were suing a railroad company for damages. Such a man can't obtain real success, but he may get rich, because he may persuade the general public to take him at his own estimate."

"The vain man in surgery is a deadly peril. He mistakes his own half-formed opinions for the oracles speaking within him. He is never conscious of his mistakes and hence keeps on making them. He misleads others by his positive assertions regarding unproved views. He clamors insistently for credit. What he aims at is to attract attention. He would rather be abused than not spoken about at all. He has noticed the fact that a plain, modest, hard-working man, doing his duty and serving humanity, attracts no more real attention than a thermometer on a balmy day. It is a sad commentary on the world that bow legs attract more attention than great virtues, and that a red nose causes more comment than a blameless life."

"A surgeon is like a postage stamp. He is useless when stuck on himself. A vain surgeon is like a milking stool; of no use except when sat upon. I don't see how any real surgeon can be vain. He is too often near to the inscrutable mystery of death—he sees too often the weaknesses of men—he too often stands at cross roads of judgment, knows that one way is the wrong way, but finds no sign to mark it—he too often has to reproach himself for mistakes—he too often sees calamity tread on the heels of calamity—he too often laments, impotent to save and watches 'Beauty and anguish walking hand and hand, the downward way to death'—he knows too well that Sophocles spoke the truth when he said:

> The power of learning may a while prevail.
> A time prolong a mortal's fleeting breath,
> But useless all her arts are to avail
> To conquer Fate or check the hand of Death.

"I don't see how any surgeon can be vain any more than I can see how an astronomer could be vain—an astronomer who peers into the depths of infinite space which the hand of Omnipotence has strewn thick with star dust."

"Real success comes only from persistent hard work. No lily handed child of ease is entitled to it or can have it. Its insignia do not come from the general public but are conferred by the profession itself. Any temperament which keeps a man from sticking at it forbids success. Mere episodes of busy idleness do not constitute work. The loafer is a failure. To loaf in front of a church is just the same as to loaf in front of a saloon. One may loaf in a library, a laboratory, a hospital, as well as on a street corner, in a bar room, or at an afternoon tea. Indolence sterilizes the mind, but work will not create genius. It is an infinitely rare gift to dream the fairy tales of science. Genius alone dreams them, but even genius must work to make them real. I believe that real success can come only from work, but I know that even the hardest work may not command it. ''Tis not in mortals to command success.' Some work wrong and fail. Some work right and fail. Some work but fail 'until they grasp the skirt of happy chance,' by which they are dragged to the openings they lacked and the opportunities they despaired of obtaining. No man could dive for pearls on a mountain; no man could become an astronomer in a cave, and it may be impossible to create opportunity."

ACCEPTANCE OF RESPONSIBILITY

Only an analytical, understanding, philosophical, God-fearing mind could give voice to such reasoning. Only a man whose mind and heart strings, duty and cares have been rendered responsive to burden and responsibility could have laid bare his soul as follows:

"A surgeon's life is a hard one. It is a life of endless strain. During most of the hours of every day his faculties are keyed up tense almost to the breaking point, and physical tire goes hand in hand with mental exhaustion. He must carry and carry naturally the heaviest responsibilities. No matter how tired he is, his faculties must be alert, his judgment clear, his will inflexible, his knowledge accurate and instantaneously accessible for transmission into action. He must be calm, no matter what the clamor, the peril, the perplexity. Of course he will worry about his patients. Every conscientious man must do so. A man who doesn't worry at all doesn't care a whole lot. I should not want a man who did not care a whole lot operating upon me or mine. Perhaps worry is a device of nature to make us try to do our very best. If we knew we should not worry, we might be tempted at times to be careless. If a surgeon analyzes his worry he can get a line on what sort of man he is himself. If he worries only because he fears he may be sued, may lose

a bill or may hurt his reputation, then with him the voice of conscience is the fear of getting caught. If he worries because of the poor patient and the credit of surgery, then he is really a conscientious man. He must expect much harsh and unjust criticism and when he is the victim of it all he can do is follow Joseph Pancoast's advice and make his shoulders broad enough to bear the burden. A surgeon must learn thorough self surrender and all his life must wear the iron yoke of duty."

"Yes! the life of a surgeon is toilsome, responsible and anxious. It is a life of stress and strain. It is small wonder that surgeons as a class are not long lived. Pneumonia, angina pectoris, Bright's disease, vascular disease are the commonest agents of dissolution. The life is full of tragedy. Sometimes it seems as though a malign destiny were intervening in our affairs."

"The days of waiting for practice are very hard and very dangerous. Those days may make a man or mar him. The same wind which blows out the penny dip urges the flames of the forest fire. Those days go far in determining what sort of a man he is and is to be. During them he should study ceaselessly, learn to work, to observe, to think, and to teach himself. He should ponder deeply and often on the responsibilities and the duties of his calling. Thus he should become a real man, an individual, a man with genuine ideas, definite beliefs, established principles and high ideals. Thus he should avoid being a mere mimic and echo."

"There is grave danger in those waiting hours, those dark hours of poverty and nonrecognition. A sensitive soul will shrink, falter and probably fail. Brooding discontent is apt to dominate, and it is a deadly peril. Jealousy may spring up, envy may attain rank luxuriance, bitterness may grow, selfishness, avarice, disloyalty, mental dishonesty may be planted. Low ideals are ever knocking for admission. From them come admiration for despicable things, desires for unworthy objects and improper professional conduct."

The frequency with which he repeats himself is striking, but the explanation is freely given in a footnote in the Papers and Speeches of DaCosta: "I quote myself at times. Such quotations may mean scantiness of mental resources, but may also be due to profound conviction. If one believes he must preach and repeat. The great Carlyle did so often, surely an insect may."

His tribute to man's research and the enormous number of things yet to be discovered are shown in his frequent repeated expression "The first few hesitating words of truth have, as yet, but scarce been lisped by the baby lips of Science," as well as his profound reverence is illustrated and thoroughly impressed on his own mind, for he repeatedly speaks of "the depths of infinite space which the hand of Omnipotence has strewn thick with star dust."

No greater tribute could have been paid to a man than was give to DaCosta by Francis T. Stewart before a class in the surgical amphitheater in Jefferson Medical College of Philadelphia in 1917 when, in describing a rare and unusual case, he said "I wished to know something about this condition, I asked Professor DaCosta, and as was always the case, I received concise information—he told me who first described the condition and when; who and where the first operation was performed; the present status of the operation with the improvements."

A RETENTIVE MEMORY

During his last illness in the hospital a doctor in visiting him spoke of Dickens, and DaCosta quoted at length from Dombey and Son. The doctor went home and looked up the quotation in the book. As near as he could tell the quotation had consumed several pages of the book, word for word. This visitor was not satisfied and made it a point to call on this ill surgeon a few days later and brought up the subject of Dombey and Son, asking when he had read it. DaCosta said "I have not had that book in my hands for over twenty-five years."

He was the same with all medical subjects. He knew; he possessed knowledge. It was an inspiration to be in his presence. His lectures were a mastery of diction and information; he never sidestepped a point but was emphatic, concise and dogmatic in his views. One was never in any doubt either of his knowledge, his authority or his position on any matter or subject. As a friend he was superb; as a foe, implacable. Who that ever heard could forget the lecture on appendicitis: "Appendicitis is inflammation of the vermiform appendix; it is characterized by abdominal pain, which is often general, colicky in nature but sooner or later localizes in the right iliac fossa; there is often nausea and vomiting, there may or may not be constipation; there is usually fever and leukocytosis; there is localized tenderness and rigidity, headache may be present, but abdominal pain which has been preceded by headache is not appendicitis."

ATTITUDE TOWARD WOMEN

His "pet peeve" however, seems to have been women. He observes that Dickens's description of Sairey Camp and Betsy Prig portrayed clearly the nurse as she was about seventy-five years ago, "A hideous affront to intelligence and an insult to humanity, often dirty, generally unscrupulous, usually drunk and always ignorant." The same often applied to the early

nurse in The Old Blockley. However, the modern nurse was characterized as the antithesis of the oldtime hireling—well educated, clean, intelligent, refined, conscientious, she is truly the right hand of the physician. DaCosta read all the works of Mary Roberts Rinehart, of whom he was very fond, but in an article entitled Suicide, read before the American Philosophical Society, he waxes eloquent regarding women: "Of late there has arisen a disposition to bring women into the forum to combat with men while the home takes care of itself. Those possessed of this disposition repudiate anatomy, spurn physiology, and disregard religion, history and common sense. Woman is not competent in man's work, she is inefficient, she loses at least twice as much time from sickness and she breaks down under sudden strains of overwork or difficulty."

"When she works as a man she must put aside not only many charms and prejudices but womanly things in general, and among those things she must put aside are healthy babies, the home and the rearing of children, and God Almighty constructed her bodily to bear children and mentally to rear them. Such women may have children but the job is usually very ill done. She cannot do properly what she was built to do. . . . If a woman invades man's callings she will pay a dreadful penalty in insanity, suicide, and in the delivery of her progeny; she will wreck the chief hope of the civilization, the clean, decent, happy home. If she works as a man she will be treated as a man and will be subjected as is a man to a multitude of irritations, depressions and worries from which she is now free. A woman's real profession is matrimony and she often makes a bad failure even in her natural profession. To make a success of this will require all her ability and energy, tact and self sacrifice. She had best leave man's affairs to man." "The blatant and militant suffragette is well along on the highway of degeneration."

A man cannot write concerning his chosen profession or teach the subject nearest his heart without weaving his own soul into it. The many editions of DaCosta's Surgery, his many scientific articles, his marvelous lectures, the honors and degrees heaped on him are too well known to be repeated or can well be imagined. He often settled arguments in a peculiar though philosophical manner. On one occasion when at a surgical convocation two groups of surgeons were presenting cholecystectomy versus cholecystotomy, and when he was called on to open the discussion, DaCosta's nimble mind offered this. "I have listened to the distinguished surgeons from the East argue for and apparently prove their point regarding cholecystotomy; I have listened to the equally distinguished gentlemen from the West argue for cholecystectomy. Gentlemen, it is all a matter of experience, but experience doesn't prove a thing or there would not be such a thing in the world as bigamy."

RADICAL AND CONSERVATIVE SURGEONS

In contrasting the two varieties of surgeons, he wove his ideals, his hates, his hopes, his detestations, his tolerance, his intolerance, his happiness, his sorrows and his knowledge into a glorious landscape of words and phrases, where the dead trees only served to accentuate the glory of the living verdure; where the mountain tops of knowledge were rendered the higher by contrast above the abysmal valleys of ignorance; where the clouds of doubt and dismay modified the soft rosy tints of the daybreak of science and the rising sun of achievement.

"Gradually, as a man becomes a surgeon, he tends toward one of the two fundamental groups into which all surgeons are divisible. The mental tendencies of an individual determine to which group their possessor or victim belongs. Each type has its strengths and its weaknesses. Each may be potent for good or active for evil. The ideal surgeon has not as yet been born. He would possess the strengths of both types and the weaknesses of neither. He would have wisdom as well as knowledge—tact as well as skill—confident hope as well as cautious doubt. His hand, like that of Joseph Pancoast, would be as light as floating perfume—his eye as quick as a flashing sunbeam—his heart as broad as humanity—his soul as sweet as the waters of Lebanon."

"One fundamental class is the conservative, the other is the radical. The conservative is often a most valuable factor in surgery. He is a brake on the wheel and often stops the dashing automobile of progress when on a joy ride from upsetting in the ditch of folly. He smothers the torch of the fantastic, snatches the mask from pretense and punctures the hot air balloon of egotism. He studies the past and reveres it, likes to penetrate its cities and its silences, to repeople its mouldering ruins, and to worship at its shattered shrines, and, in the words of Macaulay, looks back upon some Golden Age that has had no existence outside of his own mind. He attaches an exaggerated importance to books, and minimizes the value of new methods of communicating ideas. He has a great respect for authorities, and would rather 'sin with Pope than shine with Pye.' He is prone to write ponderous treatises, each of which has a name so complicated that it sounds like a sobriety test. He is apt to regard present day claims through the dim sublimation of the foggy and remote. He regards each so-called 'new'

thing as a wrong basely done to the established order and agrees with Solomon that there is no new thing. He is very doubtful of the possibility of reforming anything or anybody. He follows custom even when it is unreasonable or actually absurd. His headlight, like the light of the glow worm, is on the wrong end. He progresses, but in a circle, like the hands of a clock. He is not the active minded man behind the gun, but the slow and often dull man behind the times. His ideas are from a reservoir and not from a spring. Such conservatism may be temperamental opposition to change, may be a mask for incapacity, or an excuse for laziness. He may block or drag back the auto of progress even when it is moving surely, in the right direction and on the right road. He is apt to be a pessimist—seeing the thorns and not the roses—seeing the hole in the doughnut, but not the doughnut.

"The best and most useful conservative is one who has the radicalism of youth and inexperience corrected by age and experience. He is cautious of accepting new things, but can be brought to believe them. He leans to traditional notions, but may be divorced from them after showing him the conduct of the correspondent Error. He will make no successes which will shake the world, but he will make few irremediable blunders. In trying conscientiously to reach a decision, he will often be plunged neck deep in a barrel of quandary. He will be a careful and successful but not a brilliant or notably rapid operator. He will probably be respected, learned, and prosperous."

"A conservative man, when he looks through the spectacles of conservatism, will see common things with the greatest clearness and will come to know them with absolute certainty, but he will be unable to recognize the Good Fairy coming in the loathsome disguise of a Discovery."

"Our most splendid triumphs, our worst mistakes, and our saddest failures come from the radical mind. It is a spring and not a reservoir. It is a voice and not an echo. In the radical group are the original thinkers, the investigators, the discoverers, the combative spirits who 'fight like raging devils for conciliation and hate each other for the love of God,' The real radical believes a new statement because it is new, and doubts an old view because it is old. He blazes the way for lesser minds but is always in danger of being lost in the jungle. His feet may be in the muck heap, but his head is among the stars of space. He is a dreamer of dreams. If he were to lose a leg, he would congratulate himself that he now had but one foot to keep warm. He habitually ignores the reasonably probable and revels in the doubtfully positive. His ideals are broad, expansive, on a great scale. He is ever seeking to make converts. He has an utter contempt for authority. He jumps to conclusions and may make the champion long distance leap from the frying pan into the fire. He has fierce controversies, devises operations, founds hypotheses, launches theories, discovers diseases, and dazzles all who know him by brilliant flights and amazing activities. As an operator he is brilliant, relying upon skill more than judgment, taking desperate chances, and skimming almost gaily within a hair's breadth of the deadliest catastrophes. He needs to have ever on duty by his side a peculiarly attentive guardian angel. He is never moderate, in fact, he scorns moderation. He is invariably convinced that he is always right. He will not brook contradiction and regards opponents as instigated by the worst possible motives. His knife may cut for good or ill. He obtains wonderful successes and makes dreadful mistakes. He is often a copious and hasty writer, rather prone to recording things as certain long before they are proved. He loudly claims credit he thinks his due. He rides the Rosinante of a hobby as though it were a splendid charger. He often fails to reach his goal and, like a squirrel in a cage, rises only to fall.

"The best type of the radical makes the real progress of humanity. Such a great man is a most attractive personality. He may die poor through adhering to some ideal."

WILLINGNESS TO RECOGNIZE OTHERS

There is another peculiar claim to greatness, rare, but possessed by this man, namely his willingness to pay tribute to ability and accomplishment of others. The baseness of ingratitude shook him deeply, for he said "I am impressed by ingratitude, the ingratitude of patients and in assistants whom I have helped and, believe me, I have experienced both." A veritable anguish is in the heart of one who will say "The death of a patient after an operation is always hard to bear; it is particularly hard to bear if unexpected. Did any one of you ever have a patient die from an anesthetic? I did. It was horrible. Such an event will shake the strongest man."

He accepted the illness which caused his death as the true leader he was, for a man to be a leader must be primarily a soldier, accepting a soldier's life, a soldier's sacrifice, a soldier's glory and a soldier's death. He chose early in life a variable star to follow—the twin star of service and duty. He followed it constantly, consistently, energetically and courageously. He has joined the immortals, but he has immortalized himself in American surgery and in the hearts and minds of all who were fortunate enough to bask in the radiance of his knowledge and glory.

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Teaching Surgery

W. T. COUGHLIN, M.D.
ST. LOUIS

Those of us who are old enough to remember the condition of our hospitals and the character of the surgery practiced in them, even in the first decade of this century, alone are able to appreciate properly the changes that have occurred and the progress that has been made. The surgical profession of this country for the past twenty-five years has continuously and strongly emphasized the idea of improvement of the care of the surgical patient.

The most certain indication of a better and better outlook for surgery is this: The medical schools are going to teach it as a specialty; graduate courses for the study of surgery in medical schools are every year becoming more and more sought after by those qualified, and the number of graduates who have already served as interns and who are willing to spend the additional time and money in order to qualify themselves to meet the requirements of the American Board is gratifying. If the rule that "a man must learn to do by doing" were literally true, then no one could ever learn to practice until after he had practiced. But a man can become qualified to perform surgical operations without "slaying his thousands." He may do that by becoming an assistant to some well qualified surgeon who is also qualified to teach him (such are scarce); or he may enter on a period of special training in medical school and hospital. As to the length of time required, there may be a difference of opinion. Those who have observed are well aware of the fact that there are some men who require but little teaching; those, at the end of the first year, are better qualified than some of the others will ever be, no matter how long they are trained. The period of training under supervision should be at least three years in actual work with patients after at least two spent in reviewing the fundamentals, especially anatomy, physiology and pathology.

All surgeons know that it takes something more than a bright mind and strong desire to make a successful surgeon. Many an extraordinarily bright and well trained man has never been able actually to "make it go" successfully either in institutional or in private practice. There must be a natural aptitude for it.

A man taking graduate work in surgery should not be trained like a child. The opportunity ought to be afforded him to learn surgery, but that he should be "supervised" is to me ridiculous. Some of those having a good deal to do with the graduate schools seem to think that surgery can be learned like Greek or Latin or history—so many hours, so many credits. Very bad is the idea that much more "credit" should be accorded a man for what is called "research" than for excelling as diagnostician, pathologist and practical surgeon. However, in the main it must be acknowledged that those engaged in teaching surgery are those who know it best and do it best.

Read before the St. Louis Surgical Society, Jan. 9, 1940.
Dr. Coughlin, who was professor of surgery and director of the surgery department of St. Louis University School of Medicine, died May 22, 1940.

USE OF RESEARCH

Research is, of course, most valuable, but a genius in research might be a failure as a surgeon. The best surgeons are those who know enough about research to enable them to increase their store of knowledge by intelligent experiments on the lower animals when, as and if the spirit moves them. It hasn't been so long since degrees in surgery were given for "original investigative work" extending over a period of six months to a year! Surgery cannot be learned in this way.

TRAINING GIVEN AT ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE

I wish to outline what we have been doing in our medical school and I should like to receive criticism, because I know, of course, that our plan is not perfect. The question is whether we shall be able to devise a better plan; by receiving criticism we shall at least learn some things not to do.

We began with a two year course twelve years ago, which has now been lengthened to four. A candidate must have creditably completed a rotating internship of one year. He begins his course in the department of pathology, where he must remain one year, applying himself to general pathology and to surgical pathology. If his work has been satisfactory to the head of the department of pathology, he enters his first year's hospital service.

In his first year's hospital service only two thirds of his time is given to the hospital, one third being spent in the anatomy, surgical pathology and experimental departments. He does no major operations on the human body during this year but he is first assistant in all but the most formidable operations; in these he must be second assistant. He is permitted to use the experimental laboratory and is furnished with materials. He experiments in acquiring technic. He is direct supervisor of the work of the intern.

His second year more or less repeats the first with the exception that this year, on pre-

senting a certificate of proficiency from the director of animal surgery, he is allowed to perform major operations on the human body if assisted by one of professorial rank. He may act as first assistant in any major case. In the most serious, such as operations on the brain, lung or stomach, he must be first assistant. In this year we use him during his school service as an instructor in anatomy and surgical pathology. He has the laboratory of technic at his disposal and must perfect himself in the technic of each major procedure before he will be permitted to perform it on a patient, even though assisted by the professor. We use him as an instructor for interns and for nurses. By the middle of this year he shall have completed a clinical study of his own choice, begun in his first month of hospital service and based on material that has passed through the hospital or outpatient department.

His fourth year of preparation is almost equally divided between hospital and school. He fixes his own schedule. He is given complete charge of four beds. It is up to him to keep the cases moving. His work is under the immediate supervision of the chief. He is, on request, entitled to the assistance of any one of professorial rank. He must not accept assistance of any one less than senior intern. In the last half of his service he does some animal experimentation and must present, at the end of his service, a thesis based thereon. His laboratory materials are furnished him without cost. We use him as a service supervisor, intern and extern instructor and, in the school, as demonstrator in anatomy and surgical pathology. He is expected to be able to pass a practical examination in anatomy, physiology, pathology and surgery at the end of the course.

We cannot yet know whether this is the best way to train surgeons. It will take fifteen or twenty years to decide the question. My opinion is that not all those who get such an opportunity will become surgeons, and many will yet become men of renown in surgery who will never have enjoyed such opportunities to learn it.

COMMENT

Has our method any advantages over the established method—that of learning through a long assistantship? Certainly the best way to qualify in the purely clinical aspects is the long period of assistantship with a master surgeon. But, as has been said before, master surgeons are rare. There are so many doing surgery in this country that the clinical material which falls to one man is not as abundant as formerly. Although there is greater need for a greater number of better qualified men, yet few can become master surgeons. These men whom we are turning out would make excellent associates for well qualified surgeons until they become a few years older. These men, after all this training, are all under 30 years of age—some no more than 26. Surely this is too early an age for the acquisition of a surgical practice. Could it be better done in some other way?

Before he ever comes to learn surgery is the time for the prospective surgeon to learn medicine and people; he could do that in no better way than by going out into general practice at the end of his junior internship. Let him spend at least five years in this and then let him seek a course in general surgery, something like what I have outlined. It would require a certain "calling" in the candidate to go through with such a "proving." He would certainly have the necessary fortitude, and there are times in every surgeon's life when fortitude is a prize. Any young man who, having once established himself in private practice, is willing to "throw it all up" for an opportunity to study surgery for four years surely is willing to make a large sacrifice, and I believe that he would become a credit to his profession. The contention is that such a plan would take too long. Well, the young surgeon gets pretty well over being young before he gets much private surgical practice. He is not expected to get much practice of his own before he is 40. As it is, unless he is fortunate, I fear he must be often hungry and many times find his virtue sorely strained. No surgeon can be much credit to surgery these days unless he confines his attention to surgery. No one will enter surgery from now on except by the door of special training.

Beginning to Practice.—When you enter a new community, appearance is important. You do not have to have the most expensive clothes but what you wear can look well on you. Your car does not have to be new, but it can be respectable looking. Above all, cleanliness will make or lose a practice quicker than almost anything. After you have been out a few years, check yourself with your confrère as to whether you are keeping up to date. Have you attended meetings and read your medical journals? . . . As early as possible, become a member of your county and state society and meet with your fellow practitioners. Being charitable to the other doctor in your community is most important. . . . If you disagree with the other man's opinion, regardless of how bad his judgment has been, a kind interpretation of the case will make all happier, including the patient. Whenever possible, associate with men you have to look up to. This thought applies to business men as well as men in the profession. They are stimulating and will give you a subconscious lift. In your early practice associate yourself with dispensary services and charitable enterprises. It not only improves your knowledge but allows you to rub elbows with many people of value to you throughout your professional career. Always treat those in work associated with medical practice with kindness and respect. Although you will see doctors who will be unkind to nurses when they can't talk back, remember they have been taught to look up to you. See that they are able to.—Sproule, Ralph P.: A Doctor Speaks to Students, *Marquette M. Rev.* **5**:1 (Nov.) 1940.

Digests and Reviews

GUY'S STUDENTS PASS EMERGENCY TEST

Slightly condensed from Guy's Hospital Gazette, Sept. 21, 1940.

Guy's Hospital has now been subjected to the effects of real modern warfare. The enemy has seen fit to indulge in indiscriminate bombing raids over the London area, and as a result we have received our share of casualties. On Saturday, September 7, in the late afternoon, a series of fires was started following an intensive air raid; using these fires as beacons, the raiders returned throughout the night to attack their military objectives or anything else in the very approximate neighborhood.

From the start of this offensive, a steady stream of casualties began to arrive at the Memorial Gates of Guy's Hospital. What we had organized and prepared for in the previous months had suddenly come to pass. Almost all of the patients were suffering from shock, a shock that was not only traumatic but also mental, for not a few of them had seen their relatives and friends fall victims to this German wretchedness.

Both medical and surgical staffs worked in complete harmony under the constant supervision of our deputy superintendent. The immediate problem in the majority of cases was the adequate administration of resuscitation. The architectural deficiencies of our buildings were easily overcome by the stable cooperation of the stretcher bearers, who worked ceaselessly and without complaint. This is not the time for a description of cases, but one cannot help remarking on the almost dramatic recovery of seemingly lifeless casualties after a vigorous regimen of resuscitation had been instituted. Many of these patients who had suffered a multiplicity of perforating wounds of the chest and abdomen together with head injuries and burns were removed to the operating room within a few hours of admission; there our surgeons operated on them, applying their tireless skill without effort and with admirable patience until their job was finished.

To avoid congestion of the wards by the accumulation of patients, a system of evacuation to base hospitals was started at once. Just as soon as emergency treatment had been applied and the patients had sufficiently recovered, they were comfortably accommodated in a stretcher bus, appropriate care being taken of the injuries so that patients did not suffer by transport. In spite of many of these operations taking place at night under constant exposure to bombs and shrapnel, there is not a single report of any patient having suffered adversely from the journey.

The performance of students and nurses throughout the entire procedure has been one of merit and a tribute to themselves and to Guy's Hospital. There was not the slightest suggestion of hysteria or fright among any of them, but, instead, each worked with a cool efficiency, applying his own intelligence to what had to be done instead of stupidly standing about waiting for orders. When there was work to be done there was always an abundance of available personnel ready on the spot; in the intervals between action, each person sought out a safe underground room and curled up in a well deserved quiet sleep.

Many months ago the student body was released from the Emergency Medical Service. At the time there was a good deal of speculation as to the reaction of the students, especially with regard to what might be expected of them when their services were really required. That question has now been answered; without thought to their personal safety, without bitterness or even a grumble, sleepless and fatigued as they were, they piled into each new task with a vigor that did them credit.

THE ANATOMIST IN MEDICAL EDUCATION

Abridgment of a lecture by Lewis H. Weed, professor of anatomy, Johns Hopkins University School of Medicine, Baltimore, delivered at Washington University School of Medicine, St. Louis, May 17, 1939, and published in the Journal of the Association of American Medical Colleges, September 1939.

I propose to discuss the field of anatomy in its broad relation to medical education. From the derivation of the word, anatomy would seem to be restricted to the cutting apart of finished total structures, but the subject matter studied by anatomists today extends far beyond the body structure of man and animals. To the time honored method of investigation through dissection with scalpel, probe, scissors and forceps, the anatomist has added to his tools of trade the microscope and microtome, the incubator and culture slide, the caliper and measuring rod, the kymograph and induction coil, even the spectroscope and colorimeter. Anatomy has evolved into a mother science which embraces certain well defined subdivisions—gross human anatomy, comparative anatomy, histology and cytology, embryology, neuro-anatomy and physical anthropology.

Today a broadly extending academic discipline, this anatomy of medical schools has come to be one of the major biologic sciences that have to do with life processes as these affect the structure and to a lesser extent the function of vertebrates. The anatomist

remembers the position of his subject in the training of physicians up to a century or so ago, when practically the entire basic instruction of the young physician was centered in the dissecting table. The body of biologic fact was then all too small; yet out of anatomy grew physiology. With the development of the autopsy technic, gross morbid anatomy came from the dissecting table and soon assumed adolescence and adulthood as a separate university discipline.

EVOLUTIONARY CHANGES

The discovery of cells through the use of the compound microscope added its share of complications to the simple structure of medical education. While the anatomist was learning to use the microscope, the pathologist likewise was employing the same means toward unfolding the disturbances of structure caused by disease. Then, in the fourth quarter of the last century, medicine was advanced by the discovery of the relation of certain bacteria to disease, and medical education processes again had to accommodate themselves to a new subject in teaching. At the same time chemistry began to make its claims on the medical curriculum and, with the development of its biologic aspects, still another major discipline found its place in the required work of the ever suffering medical student. Almost simultaneously the study of materia medica became invigorated and altered through the introduction of chemical and physiologic approaches and a true pharmacology assembled a new mass of information, dislocating much of the old but retaining some of its classic learning. Even with these inroads into the curriculum there was plenty of time for all the required instruction in the four year course offered by the best American medical schools at the beginning of the century.

But how different it is today regarding the demand for required hours in the medical curriculum! We are still giving—and I believe properly—the degree of doctor of medicine at the end of the classic four year period. But, since the turn of the century, the total body of fact in medicine has increased enormously. Clinical medicine is no longer based entirely on pathology. During the past forty years chemistry, physics and physiology have contributed their full share to medical diagnosis, therapy and prognosis. The study of disease has broadened, to become rather paradoxically an investigation of the disturbances of physiology; of parasitism by bacteria, viruses, fungi and protozoan forms; of the biology of new growths. Alongside this development of internal medicine, the subdivisions of surgery have all undergone phenomenal growth.

These evolutionary changes have all occurred within subjects included in the medical course of fifty years ago. Yet other developments have taken place in recent years, and the overcrowded curriculum of medical teaching is being pressed to include these also. Prominent in this group of new subjects is that of preventive medicine. And closely allied to this aspect there has come realization that medicine does not cease with determination of the diagnosis and therapy: that there are social, environmental, economic factors in disease which must be included in the summary of the patient as a sick individual. Then too industrial medicine, forensic medicine and medical genetics likewise have their many advocates; and the end is not yet in sight. Nor do we wish the end to come: we live in a field of advancing medicine and I pray that this pressure, embarrassing as it is to medical deans and curriculum committees, will never cease.

PURPOSE OF THE MEDICAL SCHOOL

What, then, should be the primary aim of the faculties of medicine which are responsible for the arrangement of the course of study leading to the degree of doctor of medicine in four years? The chief purpose of the medical school is to train physicians in the best possible way. Just what the faculty of medicine does in its course of instruction is in the final analysis determined by local opportunities, by local facilities, by the quality of the faculty and by the extent of financial support. The result is, in my opinion, most desirable, as it ultimately produces medical schools of widely diverging character. The aim of all these schools remains essentially the same—to train the best type of physician. If one adopts the contention that the chief aim of medical education should be the establishment of an attitude of mind toward the study of disease, the arrangement of the course of study and the general disposition of required and optional work become matters of relative indifference. The pattern of the curriculum is of secondary importance.

With such a concept of curricular patterns, we can view with calmness the constant reduction of required hours in courses like those in anatomy. The decrease in time allotted to anatomy seems the more striking as for many years anatomy formed almost the entire basis of preclinical instruction. For many generations anatomy had no real competitors in the struggle for the student's time.

SCOPE OF FOUR YEAR MEDICAL COURSE

Everywhere throughout medical schools today there is realization that in any of the prescribed divisions of instruction the student has time merely for an initial survey of the subject matter of that branch of medical knowledge. The fund of information is too large in every one of these subjects: the student can at best obtain merely the biologic philosophy of the subject, hardly the pertinent details. He learns in a preliminary way the manipulative procedures

employed in the field for the acquisition of knowledge, but the acquirement of technical skills is postponed in this educational process to the intern-resident years or to the years as laboratory assistant. Our four year medical course, therefore, becomes a preliminary canter across a wide and rugged field. The student acquires a general comprehension and a philosophy in each course rather than a great body of specific knowledge and a mastery of technical procedure.

The merit of-this postponement of the acquirement of the technical proficiencies until the postgraduate years is that it has permitted medical teachers to devote their energies largely to presentation of biologic points of view rather than to insistence on technics. Here medicine has been more fortunate, or wise, than dentistry. For in American dentistry we are confronted with an art standing supreme in its international field as a health service. Dentistry is today a superb artistry, but only relatively few dental practitioners or teachers are aware of the full biologic implications of disease of the teeth and jaws. The dental schools of America have insisted that their students acquire in the four year curriculum all of the technical proficiency needed for immediate practice. The dental schools provide biologic courses in the preclinical medical sciences for roughly one and one half years of the four year course; then, in spite of sporadic efforts at reform, the school superimposes two and one half years of the most rigid technical discipline. No wonder that the scientific interests of the average dental student in the biologic and medical aspects of his great subject do not survive. The number of dental teachers who still maintain the spirit of investigative curiosity, except as to technical method, is wofully small. The result of the development of superb technics in dentistry has been a pulling away from medicine: dentistry has become too largely a restorative and reparative art. It has produced a technical perfection which is not being applied, and cannot be applied, to the whole population. Technical dentistry, therefore, has arrived in a blind alley: it can liberate itself as a health agency only by developing a biologic point of view and a biologic body of knowledge. To do this the dental school should emphasize the underlying biologic sciences and relegate technical training, except as to the theory of procedure, to postgraduate years. It would do well to follow medicine in its educational program.

MEDICINE A BIOLOGIC SCIENCE

Medicine is rapidly becoming more and more of a biologic science. The practice of medicine is still essentially an art, but alongside this art an appreciable body of scientific fact in human and mammalian biology is continuing rapidly to accumulate. As biologic information relating to man is in the future assembled through the efforts of geneticists, biometrists, anthropologists, anatomists, physiologists, chemists and others, medicine will stand forth not only as a curative and preventive art but as a great division of human biology.

And in this future medicine the anatomist will retain the same place in medical education that he now occupies. The anatomist will continue to teach human morphology in its widest sense. Unquestionably, it will be a larger and more soundly based subject than the gross and microscopic anatomy of today; but it will still be aimed at the disclosure of man's structure.

In the future schools of medicine I look forward to the subjugation of technics and arts in medicine as a means toward an end; therapy and prevention will rest on a fundament of sound biologic information. In the future there will still be employment for the anatomist in medical education, still an opportunity for the anatomist to supervise the student's work on human structure, still the rare and priceless privilege for the anatomist to cultivate and encourage an intellectual curiosity in the medical student, and still problems requiring attack by the anatomist.

ANATOMY AND ITS SUBDIVISIONS

The field of future endeavor looms larger and more significant than it has in the past. While it may, in some laboratories, be unfashionable momentarily to work on the problems of gross anatomy, this subdivision of the science still presents a multitude of questions of fundamental moment. With new points of view, anatomists are returning to the great subject of variability in human structures to the study of racial anatomy.

But what of the other subdivisions of anatomy in the future? The nervous system will continue to demand the concentrated attention of anatomists. Correlational studies, relating structure to function, will probably still offer the best chance of profitable return. Various mammalian forms, representing special adaptations to functional needs in nature, afford splendid material for generations of earnest research. And possibly most fruitful of all will be the investigation of the anatomic and physiologic maturation of the nervous system.

The great field of endocrinology, in which stupendous progress has been achieved in recent years, will continue to attract the best efforts of anatomists. To the advance of the past twenty years the anatomist has contributed a large share, and it seems most likely that in cooperative endeavors with physiologists and biochemists the anatomist will continue to add an important factor in morphologic control. The potentialities of these phases of endocrine function are almost unexplored.

In embryology a tremendous opportunity lies ahead and we are just taking the first timid steps in an endeavor which a few years ago would have been impossible. The solution of the significant problems of implantation and early embyronic development will add a chapter to our knowledge of human growth. Today the field of chemical or physiologic embryology is opening up to new endeavors, and with the recently discovered weapon of radioactive chemical substances a wholly novel aspect of embryonic development and growth will be unfolded in a generation or two. Histology and cytology are employing new means of attack on the chemical constitution of the cell. We have now the initial advances made by the methods of micro-incineration, of freezing drying fixation, of spectroscopic analysis, of quartz system spectrographic study with ultraviolet rays, and of the electron microscope.

It seems obvious that the anatomist has before him a great opportunity in research of prime importance to the understanding of structure. The anatomist has had a place in medical education; he will, I believe, continue to have one of the important roles in future medical education.

Comments

Dr. Nicholas Senn once said "A good surgeon is a good physician who operates."

In 1736 the first successful mastoid operation for suppurative disease was performed by Jean-Louis Petit (1674-1750). He was the foremost French surgeon of the early eighteenth century.

The first degree of doctor of medicine conferred on a woman in the United States was that received by Dr. Elizabeth Blackwell on Jan. 23, 1849, from the Geneva Medical Institution, affiliated with Hobart College, at Geneva, N. Y.

Dr. John B. Vernaglia, a surgeon at Medford, Mass., caught a tuna fish in Ipswich Bay, Mass., weighing 927 pounds, which is said to be a world's tuna fish record. The previous largest tuna fish, weighing 890 pounds, was caught by John Manning off Nova Scotia in 1939.

Since 1933 the number of women applicants to the freshman class of seventy-seven medical colleges in the United States had increased, the largest number being 689 in 1935, since which year there has been a gradual falling off in numbers. In 1939 the number of women applicants was 632, of whom 321, or 50.8 per cent, were accepted; in 1933, 62.3 per cent of the women were accepted.—Fred C. Zapffe, Secretary, Association of American Medical Colleges, Chicago.

Charles Robert Darwin, although an invalid for the rest of his life, labored for twenty years before publishing his great work "On the Origin of Species by Means of Natural Selection" (1859), perhaps the most wonderful piece of synthesis in the history of science. Darwin's extraordinary marshaling of facts, in evidence of the survival of the fittest by natural selection in the struggle for existence, had the same far-reaching influence on biologic speculation that the discoveries of Copernicus had on astronomy. —Fielding H. Garrison.

FOODS HIGHEST IN POTASSIUM

Bananas	Kohlrabi	Olives
Cabbage greens	Legumes	Paprika
Caviar	Lemons	Parsnips
Cereals	Lettuce	Pepper, black
Cocoa	Limes	Potatoes, white and sweet
Condensed milk	Meat extracts	Rutabagas
Dandelion greens	Meats and fish	Spinach
Dried fruits	Molasses	Truffles
Endive	Mushrooms	Turnips
Guavas	Mustard	
Honey	Nuts	
Horseradish		

FOODS LOWEST IN POTASSIUM

Apples	Cream	Milk
Asparagus	Cucumbers	Okra
Bacon	Eggplant	Onions
Berries	Eggs	Oysters
Bread, rye, white	Farina	Pears
Butter	Fruit juices (except pineapple and tomato)	Peppers, green
Buttermilk		Pork
Cheese		Rice, white
Citrus fruits	Grapes	Soup
Clams	Hominy	Squash, summer
Corn, green	Macaroni	Watermelon
Crackers		

—Bridges, Milton A.: Dietetics for the Clinician, ed. 3, Philadelphia, Lea & Febiger, 1937, reprinted here from Pattee, Alida Frances: Practical Dietetics with Reference to Diet in Health and Disease, Mount Vernon, N. Y., A. F. Pattee, Publisher, 1940.

DO YOU KNOW WHAT PHYSICIAN—

1. Was the first priest-physician of whom we have a record?

2. Was Ambassador from Great Britain to the United States?

3. By his discoveries in astronomy revolutionized science in general and established astronomy on a sound basis?

4. Invented a machine for unwinding the fiber of silk cocoons?

The answers are on page 1944

Correspondence

A SENIOR STUDENT VIEWS THE INTERNSHIP

To the Editor:—I should like to report the existence of a disease entity about which no literature has been written but which has existed since the birth of modern medical education. This disease is peculiar to medical students, is pandemic, beginning at the end of August (with the issuance of the "Educational Number" of THE JOURNAL) and lasting for an indefinite length of time, depending on two factors—"pull" and "resistance." Pathologically this is a disease of the psyche and runs a characteristic course. The onset is usually insidious, with prodromal symptoms of unexplained elation following third year final examinations in June. At the end of August, with the issuance of the aforementioned "Educational Number," the patient begins to feel overwhelmingly confused, undecided and unusually solicitous toward "friends" and professors. This is immediately followed by a period of undue overconfidence and grandiosity. During this period the individual closely resembles the schizophrenic, for he is continually building hospitals in his mind and living gloriously in them. On November 15, there is a sudden and marked state of depression, disorientation and confusion. This also lasts for an indefinite period of time, but sooner or later the individual returns to normal. However, there are certain sequelae which leave a definite impression on the individual's personality. Treatment, of course, is a satisfactory internship.

This brings me to the main thought of my letter, namely that procurement of internships is as bad as ever. This should not be so, for to me this matter is a simple one, revolving around two basic factors:

1. Hospitals want interns.
2. Students want internships.

However, there is a conflicting element in that some of the larger hospitals do not recognize the graduates of some of the less publicized schools. Therefore, when a student applies at these hospitals he is unmindful of this condition. With ignorant hope he wastes precious time which he could have used to better advantage by applying at a more sympathetic hospital. Consequently, I should like to submit this plan for your consideration. The plan is as follows:

1. Each hospital approved by the American Medical Association as found in your educational number is to receive each year on a definite date a list of approved grade A medical schools.
2. From this list each hospital is to pick a number of medical schools from the graduates of which it will entertain applications for internships.
3. These choices are to be sent to the American Medical Association, and this information is to be rearranged in such a manner that each school will know which hospitals will consider the applications of its students.
4. At the beginning of each school year each medical school will post a list of those hospitals which have expressed their willingness to receive applications from that particular school.
5. Appointments are to be made on November 1 by telegram, and each appointee is obligated to accept or refuse by telegram within twenty-four hours.
6. All hospitals that by the end of the following day still have vacancies are to report the number of vacancies to the American Medical Association.
7. A list of vacancies is to be compiled and sent to each medical school no later than November 15.

From this sketchy outline several advantages can be seen. First, and most important, the student who has no "pull" will not waste his time trying to get into a hospital where he has no chance at all. However, this does not prevent the student from trying to get into a hospital which is not on his school's list. Finally, the student after being rejected will now know which hospitals still have vacancies.

For those of us who are trying to obtain an internship this is a real problem. I submit this letter in good faith, with the hope that if this plan is not acceptable it will inspire other suggestions and further effort to remedy the present deplorable situation.

GEORGE SPECK, Washington, D. C.

FIRST SUCCESSFUL CESAREAN SECTION

To the Editor:—Under comments in The Student Section, bottom of page 1505 of the October 26 issue of THE JOURNAL, in regard to the operation by Dr. Richmond you state "The operation was done in Middletown, Ohio, in 1827. . . ."

The operation was performed just east of Cincinnati at Newtown, Ohio, on a servant of one of the early settlers of the Little Miami River Valley.

In 1912 the McDowell Medical Society of Cincinnati erected a monument in the memory of Dr. Richmond and of the first successful cesarean section in the United States, which he performed April 22, 1827.

JOHN T. CRONE JR., M.D., Milford, Ohio.

EDITORIAL NOTE.—According to Blanton in his "Medicine in Virginia in the Eighteenth Century," published by Garrett and Massie, Richmond, 1931, the first cesarean section in America was performed by Dr. Jesse Bennett on his own wife in a frontier settlement in the Shenandoah Valley in Virginia in 1794, which was thirty-three years earlier than that by Dr. John Lambert Richmond, to which Dr. Crone refers in his communication. Blanton writes: Mrs. Bennett's "labor was a difficult one owing to a contracted pelvis, and Dr. Alexander Humphreys of Staunton was called in consultation. The doctors tried forceps without success. Between the alternatives of craniotomy and cesarean section the patient chose the latter in spite of the opposition of Dr. Humphreys and his persistent refusal to perform such a dangerous operation. The case was urgent, and Jesse Bennett decided to operate himself. The patient, stretched on a crude plank table over two barrels, was put under the influence of a large dose of opium. Assisted only by two Negro women, the courageous frontier surgeon by one quick stroke of the knife laid open the abdomen and uterus and quickly delivered child and placenta. At this stage he delayed long enough to remove both ovaries. . . . The wounds were closed with a stout linen thread, and contrary to the expectation of every one present Mrs. Bennett was soon well and active. The child, a daughter, lived to be 77 years of age." It is

interesting to note that the oophorectomy performed on his wife by Dr. Bennett antedated Ephraim McDowell's famous operation on Mrs. Crawford by more than fifteen years. Dr. Bennett has not generally been given a place of honor in the medical history of America, because he did not report his case in a medical journal. Dr. John Lambert Richmond reported his operation in Newtown, Hamilton County, Ohio, in February 1830 (*Western Journal of the Medical and Physical Sciences* **3**:485).

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items for consideration for publication in the Student Section.

First Aid Required of Minnesota Freshmen

The University of Minnesota Medical School, Minneapolis, has instituted a required course in first aid for freshman medical students. The one quarter course, consisting of fourteen lectures and six practical demonstrations, was instituted because it was felt that it was pertinent to the preparedness program in the event of an emergency. This is one of the first medical schools in the country to include such a course in the curriculum for freshmen.

Student on Orthopedic Program

Marshall R. Urist, a senior at Johns Hopkins University School of Medicine, represented undergraduate research at a meeting of the Robert Jones Orthopedic Club in Baltimore, November 7; his paper was entitled "Research in Calcification of Callus." There were papers also by Dr. Walter Dandy on "Intraspinal Causes of Back Pain" and by Dr. Warfield Firor on tetanus, and Dr. M. N. Smith-Petersen showed a movie on arthroplasty.

Vermont Lengthens the Senior Year

The office of the dean of the University of Vermont College of Medicine, Burlington, has announced that beginning next June 1 the teaching in the senior year of the medical college will be extended from thirty-two weeks to forty-four weeks.

Michigan Reduces Number of Prescribed Hours

Recognizing the value of independent thinking and self-conceived effort, the University of Michigan Medical School, Ann Arbor, has reduced the number of prescribed hours in the curriculum. The total number of hours required for didactic courses, clinics and laboratory sciences had become so great that students found no time for independent study and reflection. According to Dean Albert C. Furstenberg, medical training is not the accumulation of factual knowledge and information; it is the acquisition of understanding and powers of interpretation which gives the student a grasp of the practical problems.

Alpha Omega Alpha at Western Reserve

The following students of Western Reserve University School of Medicine, Cleveland, have been elected to Alpha Omega Alpha honorary medical society: Norma Anderson Beall, Daniel Anthony Brody, Janet Turreff Dingle, Gerald Tambling Kent, Aaron Paley, Leonard Michael Schuman, Joseph Selman and Lester Louis Williams.

Guest Speakers at Oklahoma

Dr. Alfred W. Adson, professor of neurosurgery at the Mayo Foundation, Rochester, Minn., addressed the entire student body of the University of Oklahoma School of Medicine, Oklahoma City, in October on "The Future of Medical Practice"; Dr. Elliott P. Joslin, emeritus clinical professor of medicine, Harvard Medical School, Boston, on "Diabetes," and Dr. M. Edward Davis, associate professor of obstetrics and gynecology, University of Chicago School of Medicine, addressed the senior class on the use of stilbestrol. The addresses were delivered during the time of the meeting of the Oklahoma City Clinical Society, October 28-31.

New York University's Freshman Officers

The first year class at New York University College of Medicine, New York, has elected the following officers: president, John G. Murray of Brown University and Mount Vernon, N. Y.; vice president, Edward E. Banta of Dartmouth and Tenafly, N. J.; treasurer, Sheldon Schwartz of Rensselaer Polytechnic Institute and Richmond Hill, L. I., N. Y.; secretary, Naomi de Sola Pool of Goucher College and New York; council representatives are Sidney A. Haber of Cornell and New York and Franklin Brundage of Cornell and Pelham Manor, N. Y.

Virginians Honor Yellow Fever Volunteer

John J. Moran was guest of honor at a dinner given by the faculty of the University of Virginia Department of Medicine, Charlottesville, October 23, at which the principal speaker was Brig. Gen. Jefferson R. Keane, U. S. Army, retired. Mr. Moran was one of twenty-three volunteers who contracted yellow fever in the famous experiments conducted in Cuba by the U. S. Army Yellow Fever Commission in 1900 and 1901, of which Major Walter Reed was chairman.

President Theodore Roosevelt transmitted to the Congress of the United States, Dec. 5, 1906, a memorandum addressed to him by Surgeon General O'Reilly, which listed the volunteers who had submitted to the yellow fever experiments in Cuba and had the following to say concerning Mr. Moran:

> Conspicuous among them was John J. Moran, a civilian clerk employed at the headquarters of Gen. Fitzhugh Lee, at Quemados, who was one of the earliest volunteers for the second set of experiments, and whose action was dictated by the purest motives of altruism and self devotion. Mr. Moran disclaimed, before submitting to the experiments, any desire for reward and has never accepted any since, although he was offered the $200 which the liberality of the military governor enabled the commission to give to each experimental patient, the members of the board excepted. Such was his modesty that he has made no effort, so far as known to this office, to make known his connection with these experiments and reap the credit which is so justly due him. Mr. Moran was a native of Ohio.

Utah Dissolves Medical Fraternities

The students of the University of Utah School of Medicine, Salt Lake City, recently voted to dissolve the medical fraternities and establish a medical student association. The first activity scheduled by the new association is to sponsor the annual medic-lawyer football game and the dinner dance which follows. John Bruce Balken '43 was elected president of the new organization; Norman S. Anderson '44, vice president, and Miss Denise T. Callister '43, secretary and treasurer.

Expenses at Tennessee

For Tennessee students, the expenses at the University of Tennessee College of Medicine, Memphis, amount to between $225 and $275 a quarter. The cost to students from other states is $50 more. Tuition per quarter is $70 for Tennessee students and $120 for out of state students. A contingent deposit is maintained at $15. Living expenses, supplies and books account for the remainder. Students are required to have a microscope, and in the second year a hemocytometer, hemoglobinometer, a blood lancet and a stethoscope.

Scholarship Awarded at Texas

Mr. Blocker H. Joslin '41 has been awarded the J. B. Kass Research Scholarship in Preventive Medicine at the University of Texas Faculty of Medicine, Galveston. The scholarship is awarded to a medical student selected by a committee comprising a faculty member, a representative of the student body nominated by the student's association and a representative of Dr. Kass. The purpose of this yearly scholarship is to encourage research in preventive medicine.

Growth of Louisiana's Library

The library of the Louisiana State University School of Medicine, New Orleans, is known as the Agramonte Memorial Library, in honor of Dr. Aristides Agramonte, who was a member of the U. S. Army Yellow Fever Commission, which conducted experiments in Cuba in 1900 that led to the discovery of the method of transmission of yellow fever. Dr. Agramonte was appointed professor of tropical medicine in 1931 at Louisiana State University School of Medicine but died shortly before the opening of school in that year. The Agramonte Memorial Library has just closed a successful year, during which a new workroom was added to the library, the stack space was doubled and a number of journal files were completed, bringing the total of complete files of journals in the library to seventy-eight. The library had at the close of the fiscal year 10,885 volumes, an increase of 20 per cent for the year. The circulation increased 7 per cent.

New A. O. A. Members at Emory

The following members of the senior class at Emory University School of Medicine, Atlanta, Ga., were elected last month to membership, based on scholarship, character, leadership and achievement, in the honorary fraternity Alpha Omega Alpha: William Rhett Craig, Walhalla, S. C.; Manne Adams, Sebring, Fla.; William Evans Goodyear, Emory University, Ga.; Charles Thornton Cowart, Danaldsville, Ga., and Cecil Glenn White, Tucapau, S. C.

"Dad's Day" Banquet

More than 600 persons attended the banquet, October 12, at the State University of Iowa, Iowa City, in honor of the students' fathers. The toastmaster on this occasion was medical student John M. Rhodes '41, a member of Alpha Omega Alpha and of A. F. I., an honorary fraternity for outstanding senior students of all the colleges at the university.

College of Medical Evangelists

The juniors and seniors of the College of Medical Evangelists, Los Angeles, were addressed November 7 by Dr. Walter C. Alvarez of Rochester, Minn., on "Abdominal Pains," a lecture which, our correspondent writes, was essentially on the art of medicine. In attendance also were the interns of the Los Angeles County Hospital, students of the University of Southern California School of Medicine and members of the faculty of these institutions.

The 298 students enrolled in the College of Medical Evangelists came from thirty-eight states, the District of Columbia, and the following foreign lands: Australia, Bermuda, British West Indies, Canada, Canal Zone, China, Dutch East Indies, England, Germany, Hawaii, Iceland, India, Iran, Iraq, Korea, Palestine, Peru, Philippine Islands, Puerto Rico, Scotland, South Africa, Switzerland, Trinidad and Turkey.

Harvard Students After Twenty-Five Years

A celebration was held in Boston in June by members of the class of 1915 of Harvard Medical School which was attended by forty-one of the eighty-four members of the class still living. Four men came to the celebration from California, two from Colorado and two from Missouri. The class met in the faculty room of Harvard Medical School to be addressed by A. Lawrence Lowell, president emeritus of Harvard University, Prof. Walter B. Cannon, Prof. Cecil K. Drinker and Dean Burwell. The next day the classmates visited the hospitals. Saturday afternoon the classmates and wives assembled for luncheon and class pictures, then motored to Harvard, Mass., to be entertained in the country home of one of their members. The class of 1915 contributed $1,450, which was turned over to the dean for the use of the medical school.

Temple's Class Officers

John H. Kolmer was elected president of the class of 1943 and David P. Osborne president of the class of 1942 at the recent elections of the freshman and sophomore classes of Temple University School of Medicine, Philadelphia.

"DO YOU KNOW WHAT PHYSICIAN"

Following are answers to the questions appearing on page 1941:

1. Imhotep, who lived about 3,000 B. C. He was the most influential man in Egypt at that time. Imhotep gave such an impetus to medicine that about 700 years later it had become well organized. Temples of healing were built throughout Egypt in his honor. He was a real person and held the same place in Egyptian medicine that Aesculapius, a mythological character, held in Greek medicine. Imhotep was also the architect and builder of the first Egyptian pyramid.

2. Sir Auckland Campbell Geddes, who was professor of anatomy first at Edinburgh, then at the Royal College of Surgeons, Dublin, and afterward at McGill University, Montreal.

3. Nicholas Copernicus (1473-1543). Copernicus, a native of Poland, received his degree of doctor of medicine from the University of Cracow. After studying the motion of the heavenly bodies for years, he published in 1543 his treatise on the revolution of planets around the sun, giving proof that the sun was the center of the universe, rather than the earth.

4. Dr. Thomas H. Chivers (1809-1858). Dr. Chivers received his M.D. degree from Transylvania University (now the University of Kentucky) in 1830. He never practiced medicine as a means of livelihood, but throughout his life he practiced free of charge for those unable to pay. His chief interest was literature and his writings make several large volumes. There was a strong similarity between his style and that of Edgar Allan Poe. Dr. Chivers was awarded a prize at one of the fairs in his state for inventing a machine for unwinding the fiber of silk cocoons.